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ALCOHOL FROM GARBAGE.

Possibility of Conserving Food Products by Producing Ninety-six Thousand Gallons of Alcohol a Year—Experiments at Columbus, Ohio, Indicate a Profit in Utilizing Garbage This Way.

Experiments conducted during the early part of this year at the garbage reduction works of Columbus, Ohio, indicate that, should the garbage of that city be utilized for the manufacture of alcohol, as great a quantity of 90 per cent alcohol would be obtained as would be yielded by 33,600 bushels of shelled corn, or 39,529 bushels of wheat, or 110,344 bushels of potatoes.

The matter was first called to the attention of the director of public service of Columbus, George A. Borden, in December, 1915, when a new process of making alcohol from garbage was called to his attention by the inventor of the same, Dr. J. J. Morgan. In January, 1916, a partial test of the process was made, utilizing one of the regular digestors of the garbage reduction plant; which indicated that acid cooking assisted in the conversion of the carbohydrates of the garbage to fermentable sugar. Encouraged by these results, an appropriation for more complete tests was made by the City Council in July, following which more than twenty tests were made with a small experimental plant; but the results were not entirely satisfactory, since the digesting tank was not lined with acid-resisting material and was attacked by the acid, and the tin still operated only a short time before being destroyed by corrosion. Further encouraged by the results obtained by this plant, however, T. D. Banks, then director of public service, commissioned Charles P. Hoover, chemist in charge of the water purification works, to conduct an investigation, with Walter L. Melick, assistant chemist at the water purification plant, as assistant. Three tests were completed, but were not satisfactory because the equipment provided was not adequate.

By this time, however, sufficient information had been obtained to enable those in charge to construct a suitable and efficient experimental plant, which was finally completed and placed in operation on December 18, 1916. After making nine tests with the new equipment, the still was remodelled slightly and tests were again started the latter part of January and continued until the first of May of this year.

The apparatus employed is shown in the accompanying drawing, and consisted of the following:

One digester, 8 feet high and 36 inches in diameter, made of quarter-inch steel and lined with 2 inches thickness of acid-resisting brick. A screw press taking frames 5 feet square. A wooden neutralizing tank 44 inches high and 33 inches inside diameter, having a working capacity of 120 gallons, the outlet of this tank being placed 6 inches above the bottom in order to leave space for sludge. A wooden storage tank (an oil barrel) between the neutralizing tank and the cooler. A worm cooler consisting of 50 feet of $\frac{3}{4}$ -inch copper tubing immersed in a suitable

tank of water. Two wooden fermenting tanks 44 inches high and 33 inches diameter. A fermented liquor storage tank 44 inches high and 33 inches diameter. A preheater 1 foot diameter and 1 foot high, containing 30 $\frac{1}{4}$ -inch brass tubes inserted between tube sheets. Fermented liquor passes through the tubes and is heated, while alcohol vapor passes through the shell surrounding the tubes and is partially condensed by the cold liquor. A continuous beer still 12 inches in diameter, with 16 beet chambers and 5 rectifying chambers, all of copper, tinned on the inside. A condenser consisting of 10 feet of $\frac{3}{4}$ -inch copper tubing immersed in a suitable tank of water.

The garbage is first weighed, 1,000 pounds being used in most of the tests, and is charged into the digester, and from 2 per cent to 4 per cent of 60° sulphuric acid is added. The acidulated garbage is then cooked under 60-pound pressure for two hours, after which it is partially neutralized with limestone and discharged into the screw press. The liquor is discharged from the press into the neutralizing tank, and the solids from the press are dried, percolated and made into tankage.

Grease is first separated from the liquor and the liquor is then neutralized in the neutralizing tank with caustic or hydrated lime. This neutralization causes quite a precipitate to be formed, which settles to the bottom of the neutralizing tank or sludge compartment. This sludge is drawn off, dried and made into a tankage.

The neutralized liquor is cooled by passing through a coil tube surrounded by cold water, and is then discharged into the fermenters. Yeast is added and the liquor is allowed to ferment for from 36 to 72 hours. When fermentation is complete, the liquor is pumped into the fermented liquor storage tank.

Distillation is the next step in the process. Cold liquor from the storage tank flows into the tubes of the preheater, and is heated by hot alcoholic vapors surrounding the tubes. From the heater the warmed liquor flows to the still itself, entering at a point one-fourth down from the top, where it meets an ascending current of steam, which extracts the alcohol from the liquor. The liquor trickles slowly down from chamber to chamber, and is finally discharged at the bottom as spent slop. The alcohol, however, rises with the steam through the five rectifying chambers, where its concentration is greatly increased, and passes out of the top of the column to the preheater, where it is partially cooled and thereby further concentrated and purified. From the heater the alcoholic vapors pass to the condenser, where they are condensed to a liquid and received in suitable containers.

The tabulated results of the 24 experiments presented as Table 1, show the following averages, 1,000 pounds of

garbage being used in each experiment: Steam applied for 121 minutes under a pressure of 59 pounds. Amount of acid added, 33.8 pounds; of CaCO_3 , 20.3 pounds; of Ca(OH)_2 , 15 pounds; Na_2CO_3 , 363 grains. The yield per thousand pounds of garbage averaged 289 pounds of tankage, varying from 191 to 504; 20.4 pounds of skim grease, varying from 31.16 to 76.53; 45.92 pounds of total grease, varying from 31.16 to 76.53; 1,577 pounds of liquor, varying from 1160 to 1971; 28 pounds of still slop, and 2 pounds of start yeast. The average yield of 95 per cent alcohol was 4.55 gallons per ton of garbage (equivalent to 4.80 gallons of 90 per cent alcohol), varying from 3.88 to 7.16. The wide variations between the maximums and minimums are, of course, easily accounted for by the continually varying character of garbage.

The report of the experiments presented by Mr. Hoover and T. D. Banks, superintendent of the garbage reduction works, from which this information is taken, includes, in addition to table No. 1, from which the above averages were taken, other tables, as follows:

Table 2, giving an estimated cost of the plant required for treating all the city's garbage by this process; this estimate, which includes all of the apparatus, together with locker and toilet room, laboratory equipment, etc., totalled \$36,000. Table 3 gives the average wholesale prices per gallon for 180 proof denatured alcohol at New York for each year from 1911 to 1917, inclusive, which showed the price gradually falling from 41c in 1911 to 34.7c in 1914, from which it had risen to 64.8c on April 1, 1917. The average for the years 1911 to 1915, inclusive, was 38.7c; although they were informed that such alcohol had been purchases in barrels at Columbus as low as 31c. Table 4 gave the estimated revenue from alcohol under war prices as being \$3.36 per ton of garbage, derived by assuming 4.80 gallons of alcohol at 70c a gallon. The operating costs, including $4\frac{1}{2}$ per cent interest and $5\frac{1}{2}$ per cent depreciation on the cost of the plant and all details of manufacturing, including office supplies, laboratory supplies, water, etc., totalled \$2.01 per ton of garbage or 42c per gallon of alcohol. This left a profit of \$1.34 per ton of garbage, or 28c per gallon of alcohol, a return of 75 per cent on the investment. In table No. 5 were given similar estimates based on prices prevailing during

normal time, figuring alcohol as selling at 35c per gallon. Under such conditions it was estimated that the cost of alcohol per gallon would be 30.5c, yielding a profit of 4.5c per gallon, or a return of 12 per cent on the investment.

"Table No. 4 shows that, with the prevailing war prices, the installation of an alcohol plant would net a handsome return. Existing conditions, however, are such at present that no one can foretell what will occur in the future. The present high prices of food material have already had an effect of making the garbage received at the plant of lower value as regards grease and fertilizer materials, and if the present newspaper propaganda that is being made now in order to conserve our foodstuffs should cause a wave of utmost economy to spread throughout our country, there is no doubt that the garbage would no longer be as high in convertible carbohydrates as at present, and the yields shown in Table No. 1 might be somewhat reduced. On the other hand, indications are that with equipment such as will be provided should a large plant be built, with careful selection of proper yeasts, and improved methods of neutralization, better efficiencies and larger yields will be obtained than were obtained with the experimental equipment.

"If 96,000 gallons of alcohol were produced from our garbage, it would result in a large economic saving and conservation of food supplies, such as corn, grain and potatoes."

It was realized that it was possible that in obtaining the alcohol they might considerably diminish the grease and tankage which now yield the city considerable revenue. Unfortunately, the time available before making the report was not sufficient to complete many tests for determining this point, and the results are given as being tentative only. On the basis of these tests we find the amount of grease recovered reduced from 66.68 pounds per ton by the present process to 62.32 pounds if alcohol be recovered; tankage reduced from 164.5 pounds per ton of garbage to 162.0 pounds; the ammonia in the tankage reduced from 3.63 per cent to 3.26 per cent; potash increased from 2.01 per cent to 2.16 per cent, and tri-calcium phosphate from 4.94 per cent to 4.46 per cent. The value of grease recovered would be reduced about 32c, the tank-

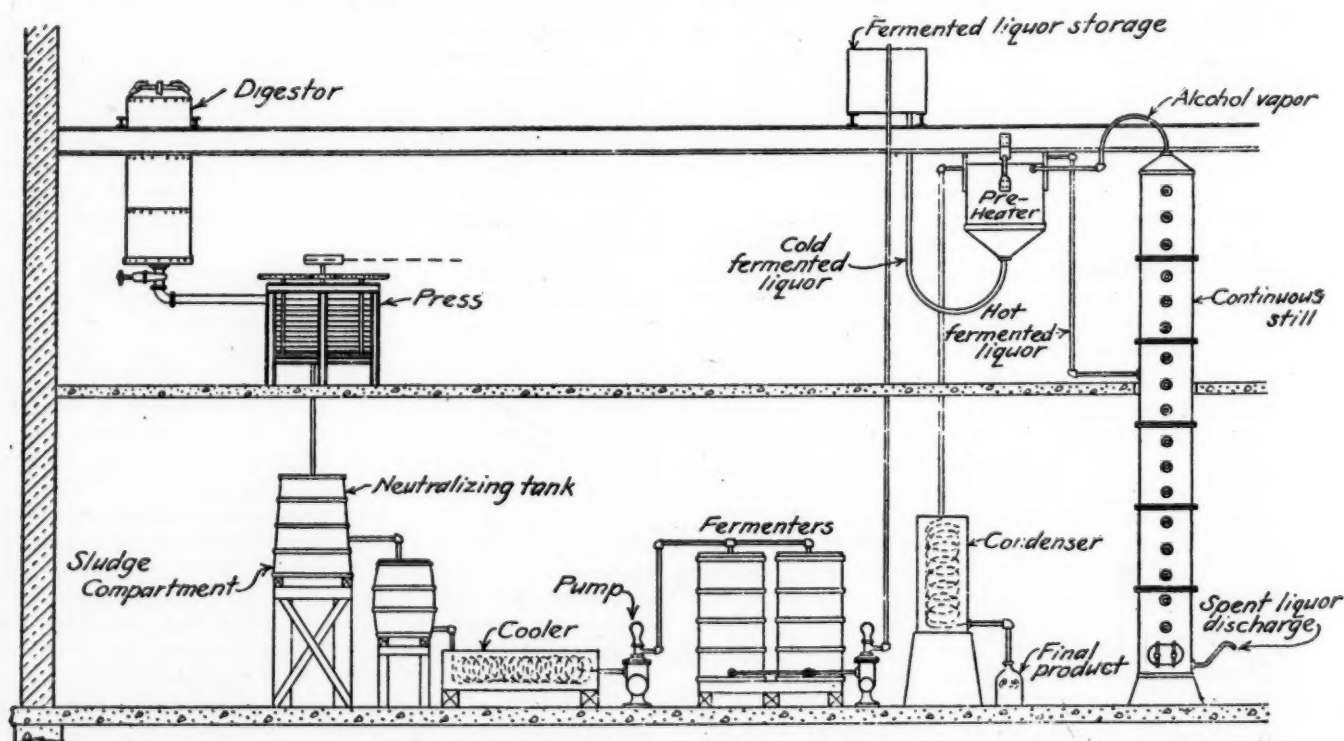


DIAGRAM OF PLANT USED FOR EXPERIMENTING IN PRODUCING ALCOHOL FROM GARBAGE.

age 15c, while there would be added the value of the alcohol, or \$4.06.

As a result of the tests, Messrs. Hoover and Banks have reached the following conclusions:

I. Alcohol of satisfactory quality, which should be equivalent in value to the product already on the market, can be produced from garbage.

II. One ton of green garbage will yield 4.8 gallons of 180 proof alcohol. The reduction works treats not less than 20,000 tons per year, therefore a yearly yield of 96,000 gallons has been the basis for our report.

III. A plant with sufficient capacity for treating the entire garbage of the city of Columbus will cost \$36,000.

IV. Based on present war time prices, the cost of producing alcohol is estimated to be 42 cents per gallon.

V. Based on normal prices, the cost is estimated to be 30.5 cents per gallon.

VI. A year's supply of our garbage, based on experiments, should produce as much alcohol as 33,600 bushels of shelled corn or 39,529 bushels of wheat, or 110,344 bushels of potatoes.

VII. Sufficient experimentation has not been done to determine the exact effect of the Morgan process on the production of tankage, although with careful manipulation it is believed that the loss, if any, should not be great.

VIII. The quality of grease produced is satisfactory and there is no loss occasioned by this process.

CONSISTENCY OF CONCRETE

Further Evidence of Weakening of Concrete Caused by Excess of Water—May Reduce Strength More Than Eighty Per Cent.

During the past few weeks we have presented abstracts of two or three reports prepared by authorities on the subject, in which they apparently demonstrated that a great loss in strength of concrete is occasioned by adding too much water to the mixture. Further evidence is presented by Professor Duff A. Abrams, in charge of the Structural Materials Research Laboratory of Lewis Institute, Chicago, in an article which appeared in a recent issue of "Concrete Highway Magazine."

The results of the tests made by this laboratory are indicated graphically by the diagram shown herewith. This diagram summarizes the results of compression tests made on 6-inch by 12-inch concrete cylinders, the mixtures ranging from one part cement and nine parts aggregate

to one part cement and two parts aggregate; which mixtures represent concretes of all qualities which are generally used for any purpose. The aggregate consisted of a mixture of sand and pebbles, graded in sizes from the finest particles up to 1¼-inch.

"These tests show that the effect of proportional changes in the mixing water is approximately the same for all mixes of concrete; consequently a composite curve has been drawn to show the average effect. The vertical distances represent the relative strength of concrete, expressed as a per cent of the maximum which can be secured from a given amount of cement and the same aggregates. The horizontal distances indicate the relative quantity of water used in the mix, considering the amount which gives the maximum strength as 100 per cent.

"The amount of water which gives the maximum strength in concrete produces a mix which is too stiff for most purposes. In plants where such products as building units, drain tile, sewer pipe, etc., are manufactured it is desirable to use a mix even drier than that which gives the maximum strength. The molds can thus be removed within a short time; this would be impossible if a wetter and more plastic mix were used.

"It will be noted that the concrete strength increases rapidly with the quantity of water over the range indicated by A-B on the diagram. With any further increase in the amount of water there is a rapid falling off in strength, as indicated by the curve BCDEF. With an amount of water about double that required for highest strength, the concrete has only about 20 per cent of the maximum strength.

"The exact amount of water corresponding to the maximum strength of concrete will vary with the method of handling and placing the concrete. Any method which involves puddling, tamping, rolling or vibration, or the exertion of pressure in any manner, will have a tendency to increase the strength of the concrete regardless of the amount of water used. However, it is probable that the effect produced by these methods will be more pronounced in the consistencies in the vicinity of the maximum strength.

"In constructing concrete roads it is necessary to mix the concrete a little wetter than that giving the maximum strength. The consistency which should be aimed at in constructing roads corresponds to about 105 per cent to 115 per cent of that giving the maximum strength. In other words, a small portion of the strength must be sacrificed in order to secure a workable concrete. The economies resulting from handling the concrete are more important than securing the maximum possible strength for a given amount of cement.

"Many contractors in constructing concrete roads insist on using quantities of water varying between 130 per cent and 200 per cent of that corresponding to the highest strength. The effect of this practice on the strength of the concrete is indicated by the region DF on the diagram. It is seen that in this case the strength is being reduced to about 50 per cent to 25 per cent of what should be obtained by a proper consistency. It must be apparent that the wearing quality of a road constructed in this way is much inferior to that of a road made from concrete mixed to proper consistency.

"In building construction it is not uncommon to find concrete mixed with a quantity of water even greater than any used in these tests.

"Few engineers or contractors realize the disastrous effects which are certain to accompany the use of too much mixing water. We frequently hear the following reasoning:

"1. The excess water does no harm because it runs off and evaporates.

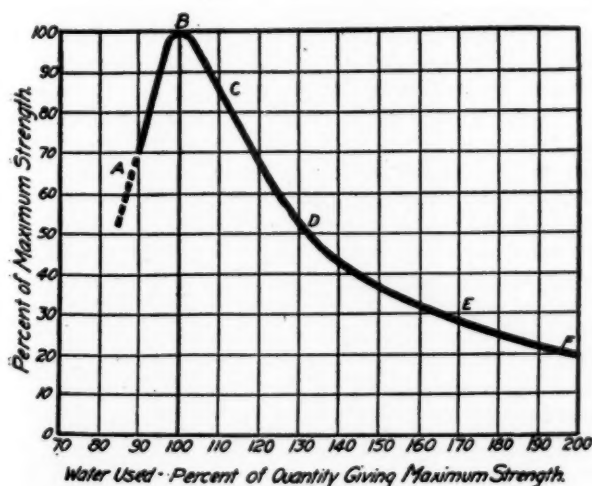


DIAGRAM SHOWING RESULTS OF TESTS.

"2. While very wet concrete is weak at early ages it gains in strength more rapidly than the drier mixes.

"3. The rich mixes used in road construction are less affected by excess water.

"The experimental work carried out in this laboratory and elsewhere show that none of these conclusions is correct. The use of excess water produces a concrete which is inferior for all mixes and at all ages. The tests also show that the excess water does not run off until consistencies are reached which correspond to those indicated in the region E-F and beyond. This is indicated by the flattening of the curve, which shows that the addition of water beyond that indicated by F has little effect. At this point a degree of 'sloppiness' is reached which gives only about 25 per cent of the available strength.

"The following questions are often asked:

"1. What is the proper consistency for concrete road work?

"2. How is this consistency to be determined?

These questions may both be answered in a nutshell by saying that for road construction the concrete should contain the smallest quantity of water which will produce a workable mix. It is evident that there may be a difference of opinion as to what constitutes a workable mix, but the diagram above shows that any reduction in the quantity of water within the range which should be aimed at in concrete road construction is accompanied by a rapid increase in the strength of the concrete.

"The proper quantity of water will vary with the quantity of cement and the size and grading of the aggregate, and to a less degree on the nature of the aggregate. The water required for a sand and crushed stone aggregate is not appreciably different from that required of a sand and pebble mixture, providing the grading of the aggregates is similar. In case of very soft or porous aggregates (which, however, should not be used in road construction) a somewhat greater quantity of water will be necessary.

"The quantity of water required will depend to a minor degree on such factors as the type of concrete mixer, method of placing the concrete, method of finishing, temperature, etc.

"There is no direct criterion for determining in advance the best quantity of water for concrete being placed on a road. The concrete should be mixed so that only a small quantity of free water will appear on the surface after leveling and striking off. This gives concrete of a jelly-like consistency.

"The principal difficulty in the way of attempting to determine in advance the proper quantity of water for use in concrete roads is due to the fact that the aggregates are generally damp and the degree of dampness is not uniform, but varies from time to time."

VACUUM STREET CLEANING IN ST. LOUIS.

In the issue of Municipal Journal for September 14, 1916, we gave the results of a test of a vacuum street cleaning machine which had been put into regular service in St. Louis, this test having been made during June and July of last year. Further figures are available, bringing the record up to April 1, 1917, from which the following information is obtained.

The district swept by these suction cleaners covers 140 blocks. The roadway consists of granite block, wood block and asphalt, and there are car tracks on almost all the streets, as they lie in the most congested part of the city. During the period from June 1 to December 1, the amount of dirt picked up from this district daily averaged 7 cubic yards. From Dec. 1st on, during the winter months, the average increased to 8½ cubic yards. There were 89 nights when the temperature was below freezing,

but during this period the suction sweepers cleaned the pavements as effectively as in warm weather. During the 11 months of operation the sweepers picked up and removed to the dump under their own power 2,152 tons of dirt. The gutter machine picked up about 60 per cent of the entire amount from the space within 4 feet of the curb. No sprinkling was done in this district after June 15th.

An investigation by Dr. Baldwin, city bacteriologist, for commissioner of streets and sewers Talber, showed that 16 per cent by bulk of the dirt picked up would pass a 200 mesh screen, while 40 per cent of the remaining material would be blown about with very light currents of air. It is stated that the amount of skidding by automobiles has been greatly reduced since the suction machines went into operation, because of the removal of this fine dust, which creates a slime when moistened.

FORM FOR WATER CONSUMPTION DATA

Recommended by Joint Committees of the American and New England Water Works Associations and Already Adopted by the Former Society.

The Committee on Water Consumption of the American Water Works Association reported at the recent convention, recommending the adoption of a form for the recording and reporting of water consumption by water works departments. This form was adopted by the society, and it is urged that all water works superintendents obtain the information necessary for filling out these forms. It is proposed that the society in the future collect and publish the information obtained by the various cities in accordance with the recommended system. The form was prepared by a joint committee representing also the New England Water Works Association, and it is hoped that through the combined influence of these two societies practically all of the cities of the country may be induced to secure consumption data classified as designated by the form.

The joint committee recommended two forms known as Form A and Form B, the only difference being that the latter does not include items 1 to 9 and 17 to 19, inclusive, which items are already contained in the general form for water works reports which has been adopted by the society. The shorter form would, therefore, be used by those cities which use the entire form for water works statistics, the longer form by those which do not use the more comprehensive one.

In presenting these forms the committee states that it "has been impressed by the dearth of water consumption statistics, which are comparable and typical of the various sections of the country. It believes that this association would be rendering a service that the membership generally would appreciate if the association should publish yearly consumption statistics of typical communities in the various sections of the country. The communities should be selected so that the statistics of a fully metered community would be placed in comparison with those of a community in which only a small fraction of the supply is metered. By selecting say from 50 to 100 of such communities, and enlisting their aid in furnishing accurate statistics, information of great and increasing importance would be made available. * * * By co-operation with the New England Water Works Association the labor and expense of collecting and publishing this information can be divided between the two associations, and the information furnished to the combined membership."

The membership of the committee consists of Edward

S. Cole, chairman, representing both societies; William W. Brush, J. N. Chester, John H. Dunlap and J. H. Purdy, representing the American Water Works Association; and C. M. Saville, D. A. Heffernan, P. R. Saunders and E. W. Kent, representing the New England Association.

The longer of the two forms is shown herewith.

- 1—City or town.
- 2—Year for which report is made.
- 3—Municipal or private?
- 4—Miles of mains.
- 5—Range of domestic pressure. Is fire pressure raised? What is the fire pressure?
- 6—Population: By last U. S. census.....
Estimated total population at this date.....
Estimated total population supplied, using 5 per family.....
- 7—Total number of services in use.
- 8—Total number of metered services.
- 9—Per cent. of metered services. [(8) divided by (7)].
- 10—How is the total water consumption determined:
(a) By meter upon supply main?.....(Yes or No.)
(b) By plunger displacement?.....(Yes or No.)
Slip allowed.....%
(c) Other methods—describe.
- 11—Total annual water supplied for *Domestic uses* by metered services.
Total annual water supplied for *Commercial use* by metered services.
Total annual water supplied for *Industrial use* by metered services.
Total annual water supplied for *Public uses* by metered services.
Total metered use.
Estimated public use unmetered.
Total accounted for. Total annual amount of water supplied, gallons daily.
Total unaccounted for. Per cent. of total supply.
- 12—Minimum night rate (1 a. m.—4 a. m.)
State how this rate is obtained.
- 12a—Maximum rate (a) without fire.
(b) with fire per hour.....per day.....
per month.....
- 12b—Total metered use per capita daily.
- 13—Average supply per service per day, gallons.
- 14—Average supply per day per capita, based on:
Total population.....
Population supplied.....
- 15—Estimated total daily supply obtained by manufacturing or other plants from sources other than the city supply.
- 16—Total per capita daily use, including all supplies.
- 17—Cost of supplying water per million gallons, figured on total operating and maintenance.

18—Total cost of supplying water per million gallons figured upon total operating and maintenance, depreciation and interest upon the fair value of the plant.

19—Revenue per million gallons.

Note:

Commercial includes stores, office buildings, hotels, boarding houses and similar establishments.

Industrial includes railroads, factories, public gas and electric plants.

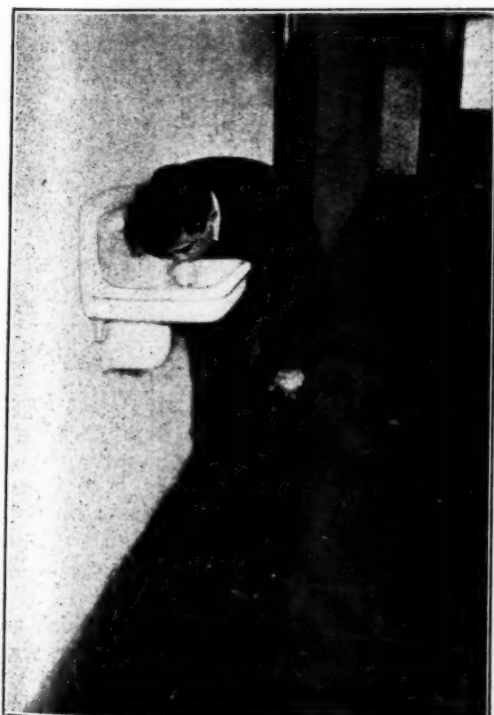
Public includes all water for public use.

SANITARY DRINKING FOUNTAINS

Investigations at University of Minnesota Indicate Contamination of Nozzles by Drinkers—New Type for Preventing This.

A few years ago sanitarians secured the practical abolition of the public drinking cup in municipal and other public places and by common carriers. So far as public drinking fountains were concerned, this change was effected quite generally by the adoption of some form of so-called sanitary drinking fountain, in which the water was received directly from the nozzle by the consumer, and no cup was used. Recently suspicion of these fountains themselves has been aroused, and an investigation was made a short time ago at the University of Minnesota to determine to what extent these suspicions were justified. In an article in the public health reports of the United States Public Health Service for May 11, H. A. Whittaker, director of the Division of Sanitation of the Minnesota State Board of Health, presented the results of this investigation.

The work consisted of a study of the mechanical features of several fountains, bacteriological examinations of the parts of the fountains that can be touched by the lips of the consumer, and bacteriological examinations of the water supplied to and discharged from the fountain. In order to determine whether bacteria were present on the nozzle or other parts of the fountain, a swab was rubbed over all parts that might easily come in contact with the lips of the consumer, and these were tested for streptococci, since these organisms are found in abundance in the mouths of human beings and may be taken as a presumptive indication of contamination from the



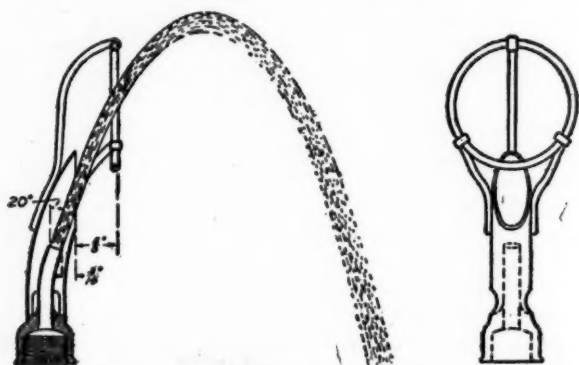
ON THE LEFT IS SEEN ONE OF THE ORDINARY DRINKING FOUNTAINS IN THE UNIVERSITY OF MINNESOTA, SHOWING THE LIPS OF THE DRINKER TOUCHING THE NOZZLE.

ON THE RIGHT IS SHOWN THE SAME FIXTURE, BUT WITH THE PROPOSED TYPE OF FOUNTAIN, IN WHICH THE JET IS DISCHARGED AT AN ANGLE WITH THE VERTICAL AND THE DRINKER'S LIPS CAN NOT TOUCH THE NOZZLE, NOR WATER FROM THEM FALL BACK UPON IT.



mouths of consumers. Samples of both the water entering the fountain and that leaving it were tested for streptococci; also for *B. coli*, but none of these were found in either the water supplied or the water draining from the fountains.

Seventy-seven drinking fountains, representing 15 different types, were examined, 65 per cent of which were of the continuous flow type, and 35 per cent of the intermittent type operated by the consumer. All of them discharged the water vertically. The height of water jet above parts of the fountain that could be touched by the lips of the consumer was less than one inch in 40 per cent of the fountains, varying from 0.1 inch to 3 inches for continuous flow fountains and from 0.4 inch to 12 inches for intermittent flow. All the fountains are subject to contamination by the water falling back from the lips onto the jet or the surrounding parts, even when the lips do not touch it; but it was found that in perhaps the majority of cases consumers place the mouth over the jet and then lower the head until the lips touch the discharge nozzle or adjacent parts of the fountain. Certain types of nozzles have closed receptacles around the point of discharge, which retain a part of the water discharged from the outlet, and coloring matter added to these re-



PROTECTED TYPE OF DRINKING FOUNTAIN NOZZLE.

ceptacles was not entirely removed for long periods of time.

Examinations of swabs showed the presence of streptococci on the parts exposed to the lips of the consumer in 80 per cent of the fountains. They were also found in the water discharged from 11 per cent of the fountains. "These facts suggest the possibility of the fountains being a factor in the transmission of certain communicable diseases and that certain changes should be made in their construction to eliminate this danger."

The principal defect in construction was believed to be the vertical discharge of water from the fountain, which made it necessary for the consumer to place his mouth directly over the point of discharge, or permitted him to put his lips in contact with the nozzle. After experimenting with various types, it was believed that the most practical construction was to discharge the water from the fountain at such an angle that the consumer could drink without approaching the point of discharge, thus eliminating the possibility of water falling back from the mouth on the parts of the fountain at or near the point of discharge. This principle had been suggested previously by Pettibone, Bogart and Clark, following an investigation of drinking fountains at the University of Wisconsin. The illustration shows a nozzle designed to embody this principle. The point of discharge is protected by being inclosed in a large tube which is cut at an angle, with its upper surface extending beyond the outer extremity of the inner tube. A wire muzzle or guard extending beyond this tube prevents the consumer from approaching the point of discharge. This nozzle can be substituted for

the nozzle used on practically any of the common types of drinking fountains. In cases where the water pressure fluctuates to a large degree, pressure regulators should probably be installed to maintain the height of the jet fairly uniform. "Doubtless there are many other mechanical possibilities of accomplishing the same result, but the one shown is simple and inexpensive and can be attached to practically any fountain." This nozzle was installed on a fountain located in the main corridor of one of the university buildings, and was kept in operation for several weeks, during which time a large number of persons used the fountain daily. The results of tests for streptococci made on this fountain were negative in every case, as were also tests of the water draining from the fountains.

AMERICAN WATER WORKS ASSOCIATION CONVENTION

Papers and Discussions During Wednesday, Thursday and Friday—Practical Questions Discussed on Superintendents' Day.

WEDNESDAY'S PROGRAM.

On Wednesday morning the program was carried out, the paper by Louis I. Birdsall "Some Problems in Filtration Plant Operation" opening the session. In this paper Mr. Birdsall described some of the difficulties met in the operation of the Minneapolis filter and methods of overcoming them. In this connection he described the sterilizing of pipes with hypochlorite before putting them into service for carrying filtered water. Pipe smaller than 12-inch they found could be satisfactorily cleaned by flushing, but 12-inch pipe or larger could not be so thoroughly cleaned in this way, and water treated with 50 pounds of hypo per million gallons was run into the pipe and allowed to stand there for some time, and when drawn off was generally found to be sterile. The pipe was then thoroughly flushed with filtered water, in order to remove any trace of hypo which might have adhered to it. The high cost of hypochlorite led Minneapolis to substitute liquid chlorine and Mr. Birdsall stated that they would not now return to the hypochlorite under any consideration. He found that in point of effectiveness one pound of liquid chlorine was equivalent to five pounds of hypochlorite. In discussing this paper Joseph Race, city bacteriologist of Ottawa, stated that after treating their pipes with hypochlorite, a taste seemed to persist in the pipes for several days, for a reason which he could not explain. The paper was also discussed by Mayo Tolman, of Charleston, W. Va., and others.

Following this, Frank A. Barbour described the history of the trouble with the ground water supply of Lowell, Mass., and the final decarbonation and removal of iron and manganese from this water by contact filters and final filtration. Mr. Barbour found that in this water the use of lime was more effective than aeration in preventing the dissolving of lead from service pipes, whereas other members stated that they had found with their water that oxidation gave better results in decreasing plumbo solvency; the reason probably being a difference in the nature of the acid in the water. This paper was discussed by Messrs. Applebaum, Bartow, Weston, Race and others.

A paper by S. G. Highland was then read, which gave the principal feature of a charter for a water works board at Clarksburg, West Virginia, in which the state conferred unusual privileges, such as those of eminent

domain, the board having entire and absolute authority over the construction and operation of the plant.

Following this, Dr. Levy, for many years until recently health officer of Richmond, then described the city's water supply, with special reference to the methods employed in purifying it. These consist in passing it through two sedimentation basins, used alternately and furnishing ten days' sedimentation; followed by the addition of a coagulant and passing through coagulating basins with a capacity of two days' supply. The effluent from these basins is then treated with liquid chlorine. As a result, the turbidity is reduced very materially, and the bacteria from approximately 2,000 in the raw water to a low number in the effluent, usually ranging from one to three and seldom or never giving high counts. Owing to the large size of the sedimentation basins they act as storage reservoirs also, and the water drawn from the river can be selected and the first run-off after each heavy rain is not used, both because of the high turbidity, but especially because of the fact that it had been found that during the first day after a heavy rain the water was much higher in bacteria than usual, owing undoubtedly to the fact that pollution was washed from the surface into the river by the first part of the rainfall.

Following Mr. Levy's interesting description came election of nominating committees and the selection of a place for holding the 1918 convention, which had been made a special order for 12.30 o'clock. The members of the several sections had previously agreed upon representatives for the nominating committee in selecting the city. For the New England section, Robert Spurr Weston; for the Middle States section, Charles R. Wood; for the Southern section, J. A. Steele; for the Central section, J. W. Alvord, and for the rest of the world, H. Hymmen, of Kitchener, Ontario.

In presenting the requests of several cities for the 1918 convention, each city was allotted three minutes. Although Chicago had sent an invitation, she had no representative present and the contest was between Detroit, Evansville and St. Louis. St. Louis received the large majority of votes and was then made the unanimous choice on motion of the Evansville representative, seconded by those from Detroit.

In the afternoon, those attending the convention visited the Richmond Country Club as guests of the Water Works Manufacturers' Association, where a number of golf contests were indulged in.

The evening session opened with a paper on "Cast Iron Pipe Prices" by B. B. Hodgman. The paper as printed will contain in tabulated form a great amount of figures giving actual contract prices for cast iron pipe paid by a number of cities for several decades back. The paper also discussed the effect of corrosion on the carrying capacity of pipes. Discussing the latter subject one member stated that his experiences indicated that small pipes tuberculated more rapidly than large, the reason for which he could not explain. In the discussion it was suggested that, as the rate of tuberculation varied with different waters, and its part as an item of depreciation therefore varied in different cities, it should be studied in each city so as to reveal the depreciation factor to be employed in that city. The effect of cleaning of pipes, the nature of sediment collecting therein, etc., were touched upon by different members.

A very interesting paper by T. Howard Barnes describing "Experience With Submerged Pipe Line in Water Supply of Puerto Barricas, Guatemala" was read by Mr. Goodell. The most unusual feature of the construction was the laying of a large submerged line without the use of a special flexible joint or a diver. The

pipe used was six-foot lengths of "Universal" pipe with two bolting lugs placed horizontal so as to allow a certain flexibility of joint in a vertical plane. These were bolted together on inclined ways supported between two scows and slid down these ways to the bottom. Only two joints were cracked in the operation. The joints were examined by a man who wore a diving suit extemporized from a water cooler set on his head, a small plate of glass being set in the front of the cooler and air supplied by hose from a hand pump; the man's body below the shoulder being unprotected. The tightness of the joints was tested by means of a locomotive injector which raised the pressure to 65 pounds.

The evening session was concluded by F. W. Cap-pelen's paper "Troubles in Constructing a 48-Inch Submerged Main." This main was dragged across the river by a cable, a "torpedo head" or short, closed, pointed section being riveted on the forward end of the pipe line. The trench was excavated by a specially constructed dipper-arm dredge run out on a trestle. An unexpectedly early spring freshet carried away the trestle and everything else, including the pipe that had been hauled nearby across the river, but the last was held by the hauling cable and returned undamaged to the trench. Other difficulties were met and overcome and the work satisfactorily completed.

Neither John Gaub nor his paper was present and this part of the program was necessarily omitted.

THURSDAY'S PROGRAM.

Thursday was set aside as Superintendents' Day, and all of the papers were of a practical nature, and most of them brought out considerable discussion, the papers continuing through the morning and afternoon, during which were read the papers listed upon the program, with the exception of two whose authors were not present.

The morning session opened with the paper by Henry B. Machen entitled "Thawing Frozen Water Mains by Electricity," an abstract of which, together with the discussion, was given in last week's issue. The second paper described "Trench Machine Work," William W. Brush narrating experience in New York in the laying of a line of 72-inch pipe. This was part of a contract for more than \$1,000,000 performed by the T. A. Gillespie Company. The contractors rented two Austen machines at a rate which figured out 7.2 cts. per cubic yard. The labor averaged 13.5 cts. per cubic yard of excavation, and the total cost was 23.4 cts., or 93.6 cts. per lineal foot. This machine was used in a sandy soil, and consisted of two lines of excavation buckets which dug a trench about 8 feet deep, with side slopes of 1:1, and discharged the excavated material along and some distance back from both sides of the trench. This obviated the necessity of sheathing, and although it required handling considerably more material than would have been the case with a trench with vertical sides, it was undoubtedly cheaper. One remarkable feature of this work was that the back-filling cost \$1.06 per lineal foot, or 13.6 cts. more than the excavation; this being the average cost resulting from the use of several methods of backfilling, none of which appeared to result in the hoped for economy.

In discussing this paper, one member stated that in Omaha the actual cost of excavating by trenching machine a trench 5 or 6 feet deep, was only 3 cts. or 4 cts. per lineal foot. George G. Earl, of New Orleans, in a communication stated that a Buckeye traction ditcher, working in the vicinity of that city, had performed some remarkably low-cost excavation, reaching a maximum rate of 1,500 feet of trench in one day with one machine operated by only two men.

One of the members having asked for suggestions as

to economical excavating of trenches in rock, information was given of a recent invention by which a wire saw was used for channeling the two sides of the trench, after which the core of the trench was blown out by drilling and blasting in the usual way. In using the wire saw, two holes 4 or 5 inches in diameter were sunk to the level of the bottom of the trench along the side line of it, and in each of these was sunk a rod carrying on its bottom a pulley around which a long continuous wire passed. The wire passed from one pulley up to and across the surface of the ground to the other hole, down this and around its pulley, up to the surface again, and thence around drive pulleys and back to the first hole, thus forming a continuous line of wire, which was caused to move by the drive pulleys. Grit was fed to the wire as it moved, and sufficient tension exerted to cause it to cut out a narrow channel, slack being taken up as the channel deepened. A test of this contrivance had apparently indicated that it would cut even the hardest rock at a much less cost than an ordinary channeling machine.

Leonard Metcalf gave the result of his observations in a number of cities from Indianapolis to Los Angeles, his general conclusion being that in the soil found in many of the central and western states trenching machinery could be used with most effective and economical results. It appeared to be the general opinion that no kind of trenching machinery could be used advantageously in city streets, where it would continually encounter service pipes and other obstructions; although one member stated that in one instance this had been done. Where mains are laid close to a line of shade trees and roots interfered, these also seemed to furnish an insuperable difficulty to machine trenching.

At this point, Mr. Barbour presented the report of the Committee on Revision of Standard Specifications for Cast Iron Pipe and Specials, in the absence of the chairman, John H. Gregory. This committee had co-operated with a similar committee from the New England Water Works Association, there being on the committee members from each association and also pipe manufacturers. The members representing the users of pipe had practically agreed upon modifications of the specifications, but as a final conference between the users and manufacturers on the committee, the latter maintained that, at this time at least, there was no great demand among users for any changes in the present specifications, that the manufacturers were well satisfied with them, and that they could not consent at this time to endorse any changes. The points which the active members of the committee believed need modifying were those looking to securing a uniform outside diameter for all weights of each size of pipe, definite specifications covering the chemical qualifications of the iron, modification of the coating, and an established relation between flexure and breaking load of the iron used. The committee recommended that the changes proposed by the active members be printed, and that the four points in controversy be submitted to the members of the society in a letter ballot. Mr. Barbour explained that it was not intended that the specifications should go into effect for several years, but that they should be adopted some time ahead of actual use in order to permit the manufacturers to prepare for the changes in their plants which would be required. Only one active member of the committee and one manufacturing member were present, and a vote on the acceptance of the report was postponed to Friday evening; at which time it was voted that the committee be continued, and be authorized and instructed to send a questionnaire to the membership at their discretion.

Following this, in the afternoon session, Mr. Brush presented another experience paper in which he described

an effort to secure a tight pipe line by the use of vitrified pipe used to convey water under a low head. (This paper will appear in an early issue of Municipal Journal.)

Another paper was also presented by Henry B. Machen, discussing leakage from high pressure fire service mains, for which he offered no explanation. The mains referred to were those of the fire service of Manhattan, New York. Special pains were taken to secure tight joints, and since the laying of the mains several thousand feet had been uncovered, but at no point had there been found any leaking joints, the greatest observable leakage being a slight sweating, which resulted in the formation of no more water than was evaporated as it formed. In spite of this, the system as a whole, when placed under pressure, was found to be losing considerable water, and this condition still exists. It was suggested that it might be due possibly to leakage into fire hydrants through the hydrant valves, the water escaping through the drip and the drain connecting the same to the sewer; also that there might have been some unintentional or surreptitious connections of private services with this high pressure line. One peculiar feature was that the amount of leakage did not increase with the pressure, but seemed rather to decrease.

The president explained at this point that the fact that Mr. Brush and Mr. Machen had each presented two papers had been commented upon, and he wished to explain that this was not due to a desire for publicity on their part, but was the result of their kindness in acceding to the requests of the program committee. In an effort to secure a number of experience papers for Superintendents' Day the committee had written scores of letters to the members of the society, but found it difficult to obtain from them any papers of this kind. They desired to make Superintendents' Day a success this year, and in order to do so had found it necessary to obtain all papers which they could persuade members to write. As a result of this explanation the society passed a vote of thanks to these two gentlemen for the trouble they had taken to assist in making Superintendents' Day a success, even to the extent of describing failures which might convey lessons to others rather than confining themselves to successes.

The superintendent of the Richmond water works, E. E. Davis, at this point read a paper describing "Forty-Five Years' Experience in Water Works," this being the length of time during which he had served in the Richmond department.

The idea of forming a bonding company to promote water sales and sanitation was suggested in a paper by F. C. Jordan, which was discussed by Messrs. Diven, Chester, Ackerman, Baker, Kirstein, Kimball and others. Mr. Jordan's idea was that a considerable hardship was imposed upon the poorer class of property owners in requiring them to pay out upon short notice the considerable sum required for installing water service and sewer connections when they were not compulsory, and he suggested the formation of a bonding company which would advance the money in much the same way as is now done for the purchasers of automobiles by companies which make a special business of this, the company retaining ownership of the plumbing fixtures until it had been reimbursed for their cost, the owner practically using them under a lease meantime. He believed that, after once being put in use, the owner would be so averse to having them removed that he would make the payments even though the company was not fully protected in its investment by the actual value of the fixtures after removal. One member raised the question, however, whether, if these fixtures were placed in a rented house or in a house carrying a mortgage, the bonding company would have a legal right to remove

fixtures which had been attached to the house. Mr. Ackerman stated that in Auburn the city arranges with owners to pay the plumber for installing such fixtures, and gives the owner ten years to repay the city, the interest and principal being collected with the taxes as a lien upon the property. One or two instances were cited, also, of somewhat similar action in other cities.

Following this paper, one entitled "Lead Wool and Its Advantages," by Robert J. Thomas, was read by Mr. Goodell in the absence of the author. (An abstract of this paper will be published in Municipal Journal.) In discussing this, Mr. Diven stated that he had found lead wool to give tighter joints than ordinary poured lead, but that he found workmen opposed to its use because of the much greater amount of strenuous calking required for such joints.

A method of determining and plotting meter capacities by use of logarithmic paper, in which the capacity curves could be represented by straight lines, was explained by Fred B. Nelson at the beginning of the evening session. In connection with this he brought out the point that investigations had shown that different makes of meters gave widely different capacities for the same nominal size; also that in a number of cases the capacity could be considerably increased by slight changes in the shape of the waterway by which friction was reduced.

Clarence L. Kirk described a method of lowering ground water level in water works trenching in porous soil carrying large amounts of water. The method consisted in driving 1-inch wells at intervals of a few feet along one side of the trench, and pumping out the ground water through these. The wells were provided at the bottom with strainers 24 inches to 30 inches long, and were washed down to a depth so that the entire length of the strainer came below the bottom of the proposed trench. In order to effect this, a line of pipe consisting of about 30 feet of 3-inch, followed by 30 feet of 2-inch, and this by 40 feet of 1½-inch pipe was laid along one side of the trench and provided with nipples screwed into the pipe at intervals of a few feet, over the outer end of each of which was slipped a length of garden hose, the other end of which hose was connected to the top of the well. This construction was used for washing down the the wells, following which the connection with the pump was reversed, and suction was applied through the system for pumping the ground water out through the wells and line of pipe. The first use of this idea had been made with the line of pipe supported down the middle of the trench and a line of wells along each side, but the construction just described, with wells on only one side of the trench, proved equally satisfactory, and avoided the interference with the work which was caused by the other construction.

Following Mr. Kirk's paper the remainder of the evening was devoted to reports of officers and committees. The treasurer reported that he had received \$16,458.72, and had dispensed \$13,196.36. The substance of the report of the Finance Committee has already been stated. The secretary gave the figures of gains and losses in each of the several classes of membership. These showed a slight net loss, but this was explained by the fact that the records last year were closed after the convention, while this year they had been closed before, thus omitting from this year's record the increase which always came about convention time.

The chairman of the Committee on Electrolysis, Albert F. Ganz, was not present, and as Mr. Henderson, who was present, desired to present a minority report, but did not wish to do so in the absence of the chairman, it was decided that the two reports be published by the society, and the subject left open for discussion and action at the

next convention, the committee being discharged at its request.

The Committee on Standard Specifications for Hydrants and Valves reported that they did not feel that there was any particular work for them to do, and asked to be discharged. They had been requested to draw up specifications for light-weight valves such as could be used in filtration plants and similar locations, but did not think it practicable to do so. As previously stated, no report was received from the Committee on Constitution.

FRIDAY'S SESSION.

Friday morning was the final session for the presentation and discussion of papers and reports, and was occupied by further reports of committees. The Committee on Prevention of Stream and Lake Pollution, Theo. A. Leisen, chairman, narrated the actions and deliberations of the committee during the year, and presented as one of its conclusions that sewage should be adequately treated before being turned into a stream or other body of water which is to be used for a public supply, and that too much burden should not be placed upon water filtration plants treating polluted streams; but that in deciding upon the degree to which the sewage should be treated, local and economic conditions should be taken into account. The chairman of the Committee on Wrought Iron Pipe had been called to join his regiment, and was unable to present a report. Also no report was received from the Committee on Mechanical Analysis of Sand. Nicholas S. Hill, chairman of the Committee on Private Fire Protection Service, reported that his committee had almost completed its report, and would have it ready for presentation in a few weeks, and suggested that it be printed in pamphlet form and sent as a supplement to the journal of the society, which was approved by the society.

The report of the Committee on City Planning consisted largely of several dozen lantern slides made from photographs sent to the committee by members of the society from various cities, showing efforts at artistic treatment of water works structures and surroundings. These slides showed that in many cities this important matter was receiving more consideration than had been accorded it a few years ago. This report, like some of the others, could not be presented by the chairman, Ernest P. Goodrich, in person, since he had been detained by the United States Government in connection with war preparations.

The Committee on Water Consumption submitted two forms, which it recommended for use by the members of the association in recording and reporting statistics dealing with consumption, one of these forms applying to those who were reporting consumption only, the other to be used as a part of the general form for reporting water works statistics. In view of the importance of bringing this matter to the attention of the members if it was to be actually used by them, without which use the report would entirely lose its value, the society adopted a motion that it be printed as a separate leaflet and sent to all the members with a request that they adopt it for actual use.

The Committee on Classification of Technical Literature, Nicholas S. Hill, chairman, reported that it had considered the matter allotted to it, but as it formed only one branch of a general committee composed of representatives from a number of societies, it could submit no report until action had been taken by the general committee.

In addition to reporting certain figures in connection with the society, which have already been given, the executive committee announced that it had this year authorized the formation of a California section.

The convention closed with the report of the Committee on Depreciation. This committee, through the chairman, John W. Alvord, submitted a final report after having made reports of progress for a number of years. One member of the committee, J. N. Hazelhurst, presented a minority report, or rather a substitute for one section of the report, in which he advocated the use of the straight line rather than the sinking fund method of calculating depreciation. After more or less animated discussion, it was decided to print both the full report and Mr. Hazelhurst's recommended modification in order that these might be studied by the members; and it was understood that at the next convention a special and ample time will be allowed for the discussion of and action upon this report, after the members shall have had time to make a study of the complex features, which will permit them to act more intelligently than would be possible without such opportunity.

This ended the business sessions. The final feature of the convention was a trip by the members to the sedimentation basins, coagulating basins, liquid chlorine plant and pumping plant of the Richmond water works, for which a special train was provided. Luncheon, with music and dancing, was served in the pumping station.

TRAVELING HEALTH DEPARTMENT LABORATORY

New Jersey State Department Installs Laboratory and Chlorine Gas Apparatus in Automobile for Emergency Use Anywhere in the State.

There are in the state of New Jersey 239 public water supply systems and 205 sewage disposal systems that are under the jurisdiction of the State Department of Health. Forty-four per cent of the whole area of the state lies within watersheds from which water is taken for potable purposes by the various municipalities of the state. Part of the work of the State Department of Health is examining and inspecting and testing water supplies at frequent intervals in order to be sure that a water of proper quality is at all times supplied to the inhabitants of the state. As part of this work it is necessary to examine and test the operation of water filtration and treatment plants. Special work is necessitated at times by the fact that, due to some accident, the water treatment plant is disabled, and the quality of the water supplied to the people becomes unsatisfactory and unsafe. To meet this emergency the State Department of Health has at its office in Trenton a chlorine gas disinfecting apparatus which it is prepared to install and operate on short notice wherever such an accident occurs. Recently the depart-

ment in this manner was able to prevent what might otherwise have been a very serious epidemic of typhoid fever at Burlington, as described in the May 3rd issue of Municipal Journal.

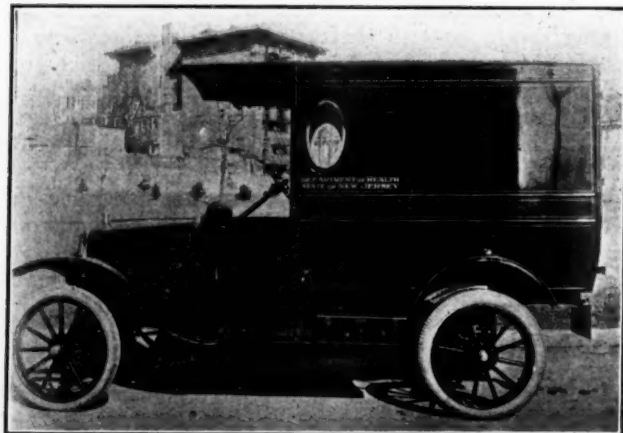
It has been shown on several occasions that it would be much better if the department had some means by which it could reach the towns threatened by an unsafe water supply more quickly than by relying on trains, which in some sections of the state do not furnish very frequent service. No section of the state is more than eighty-five miles from the capitol at Trenton, and the major portion of the public water supplies, and a majority of the population, are within fifty miles of the capitol. The department therefore decided to equip an automobile which would be ready for service at any time, and which was to be kept prepared for such emergency work. The whole outfit was made with the idea of economizing as long as the efficiency of the equipment was not affected. A special body was constructed for the chassis, which, in general, is of the same type as the usual grocery delivery wagon, but has wooden doors, both at the front behind the driver's seat and at the back of the car, which are fitted with suitable locks. Along one side of the interior of the car a shelf or work table was put in place to carry part of the equipment, and to furnish a place at which the bacteriologist could work.

Two 37° incubators were installed in which cultures of bacteria could be grown and the necessary bacteriological determinations could be made. These incubators are made so that they may either be taken from the car and used at special location on the ordinary 110 volt electric circuit, or they may be left in the car and run from a storage battery at 12 volts. The automobile is also equipped with a chlorine gas disinfection apparatus and two 10-pound cylinders of chlorine gas for the purpose of disinfecting polluted water supplies during emergencies.

The chief advantage of this equipment is in case of a break-down at any water filtration plant. A complete equipment for the disinfection of the water supply and for testing the treated water will be sent to the water plant, and remain there until assurance is given that the water is of safe quality, and that the health of the people is properly protected. In the past much valuable time was lost by the necessity of carrying the bacteriological samples to the laboratory in Trenton.

When the automobile is not in use in emergency work, it will be used in routine work for testing the results obtained in the operation of water treatment plants, sewage treatment plants and milk pasteurizing plants. This work will be carried out jointly, one man accompanying the automobile for the purpose of inspecting and testing at milk pasteurizing plants, while the other man, who also acts as chauffeur of the car, will test out some water or sewage treatment plants in the same vicinity. It is felt that this arrangement will save much valuable time that is now lost by traveling on trains to bring the bacteriological cultures back to the laboratory. It will also make it feasible to make a more extended test of water treatment plants than is possible with the present arrangements.

While this traveling laboratory was conceived and largely planned by the chief engineer of the department, and will ordinarily be assigned to the work of the Bureau of Engineering, it is to be of service to the whole department, and may be used on occasions for the control of epidemics of communicable diseases. In fact, it appears that there are many ways in which such a traveling laboratory will be of inestimable value to the department. It now appears that one of the first uses to which the equipment will be put will be that of examining the milk and water supplies at the concentration camps of soldiers in the State of New Jersey.



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Contributions suitable for this paper, either in the form of special articles or as letters discussing municipal matters, are invited and paid for.

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Municipal Journal's Information Bureau, developed by twenty-one years' research and practical experience in its special field, is at the command of our subscribers at all times and without charge.

WATER CONSUMPTION STATISTICS.

We are printing in this issue a form recommended by a joint committee of the American and New England Water Works Associations, as a standard for the collection and presentation of data concerning water consumption in the various cities of the country. *Municipal Journal* does not need to state again that it is decidedly in favor of the universal use by all water companies and departments of a form of this kind. In commenting upon the adoption of standardized forms for reporting municipal statistics, the Surveyor and Municipal Engineer of England says editorially, "The value of statistical information is at least doubled when it is prepared on a uniform basis, and members of the institution" (the Institution of Municipal and County Engineers) "who have occasion to collect and collate information upon any topic would be well advised to use the standard form, if an appropriate one is in existence."

The foundation of any science is classified information in a given field of knowledge; and water works can not be reckoned as established on a purely scientific basis until a sufficient amount of exact information concerning it has been collected and classified, and such classification can not be satisfactorily performed unless the information dealt with has been collected in a uniform way and after a standardized system. It is to be hoped, therefore, that every water works superintendent will do his part toward establishing water works practice upon a scientific basis by furnishing the necessary information concerning his own plant in such form as may be recommended by the authorities best qualified to decide thereon; recognizing that the use of a standard form that he himself may consider open to criticism is infinitely preferable to having no standard whatever.

That this form is the best available proposed standard for the purpose would seem to be certified by the high standing of the members of the committee that drew it up and of the societies they represent.

BUY LIBERTY BONDS.

Less than one per cent of the population of the United States is included in the number of fighting men provided for by any definite arrangement made so far. If there are any of the other ninety-nine per cent who are not anxious to "do their bit," they are keeping very quiet; practically all are asking the Government "What can we do to help?" The Government will undoubtedly provide answers to this question as quickly as plans can be formulated. And for a starter it has offered an opportunity for all who have \$50 or more that they have, or could put, in a savings fund of any kind. It asks them to help provide the "sinews of war," not as a gift but as a gilt-edged investment that pays a higher rate of interest than any other—3½ per cent in cash and 100 per cent in the satisfaction of having a part in defeating the enemies of democracy and doing their patriotic duty. Buy a Liberty Bond.

Cities as well as individuals are included in this opportunity. There are few cities that have not considerable amounts invested in the form of trust funds, sinking funds, and other long-time investments. Probably few of these draw more than 3½ per cent, and none can be more secure. Let cities reinvest these in Liberty Bonds; or at least, let them so invest this year's increments to such funds—making the appropriation therefor in advance, if necessary.

Shall the people of the United States show themselves less patriotic on the first call for funds than were their European allies, and enemies also, on the second and third calls?

CONTINUE PUBLIC WORK.

There is another reason why cities should do all they can to secure the investment of long-time deposits in Liberty Bonds. Banks, insurance companies, and other investors generally, will not purchase any other kind of securities in any quantity until the war bonds have been absorbed; so the sooner this can be accomplished the sooner will a demand for municipals be renewed. That there will be such demand would seem to be certain; for although there is a temporary dullness in the bond market caused by the war loan, practically all of the money raised by this loan will remain in this country and it will be only a few weeks or months before it has returned to the pockets of our citizens for re-investment.

"Business going on as usual" should be the aim in every branch of industry. As Howard E. Coffin, of the Advisory Commission of the Council of National Defense, has so emphatically said, "The declaration of war can have no really evil effect on business. We need more business, not less. Indiscriminate economy would be ruinous." Cities should set an example to individual citizens by doing everything possible to prevent stagnation of business in every line of industry. If this country ever needed to be speeded up to maximum efficiency, it is now; and every citizen not profitably employed is a drag and not a help to such efficiency.

As to labor shortage, any idea that the army will, for this year at least, seriously reduce the number of workers now available, a moment's consideration will show to be erroneous. The first 500,000 men will not, it is reported, be called out before September. But even with this number withdrawn from our workers, the male workers of the country will be reduced by less than 2 per cent. Disregarding the possibility that this small number will be made up by a drafting of women into more lines of industry, this loss could be made good by increasing the working day of the remaining male workers by nine minutes, or by increasing their efficiency by 2 per cent, which increase a little real patriotic endeavor on the part of all concerned could easily accomplish.

There is another reason why cities should take the lead in acting intelligently at this time, for this is a war not of armies but of nations, and the units of this nation organized for war are the cities. Sad experience, not only of this country but also of most others, has taught the lesson that at no time is it more essential to pay the most particular attention to the health and general welfare of individuals than when they are serving in the army. Similarly, at no time is it more necessary that cities be kept in the pink of condition, ready to meet any demands, than when they are acting as units in this warfare of nations. This requires that streets and roads be not neglected, for the handling of munitions and other war supplies will impose more than normal duties upon them, and the importance of uninterrupted service will be greater than ever. As to health and vigor, that of the city is merely a composite of the health and vigor of its citizens, and this must be maintained at the maximum in order that each may reach his highest efficiency as a worker in whatever capacity. To secure this result, the water supply, sewerage and street cleaning must be brought to and kept at the nearest possible approach to perfection. And so on all down the line.

Neglect to keep up repairs in any machine or structure is always the poorest kind of economy. If we neglect our streets beyond a certain point they can no longer be repaired—they must be rebuilt. Materials for repairs may be somewhat more expensive now than they were, but materials for construction are similarly more expensive and will be much greater in amount, and the additional cost therefor will be correspondingly greater. Therefore, because of this very increase in cost of materials, the saving that will be effected by proper maintenance, which will avert the necessity for reconstruction, is greater now than ever before. Neglect the pumps which supply our water and we risk a breakdown of the machinery, with a similar increase in the penalty we must pay for such negligence which necessitates renewal. Neglect to keep the water distribution system of ample capacity or to extend it continuously with the growth of the city, and we risk enormous losses from fire, and the reconstruction of the buildings, as in all other cases, will be more expensive now than during times of lower prices. The same danger is threatened by failure to keep the fire department supplied with ample fire apparatus and serviceable hose.

In short, no city can afford to allow its municipal program to fall behind because of increased cost of maintaining it; for while such maintenance may cost more than formerly, the penalty of failing to maintain the program will be serious to an even greater degree.

ELECTRIC COOKING AND STREET LIGHTING IN MARQUETTE.

During 1916 the Department of Light and Power of Marquette, Mich., had fifteen electric stoves in service in various parts of the city. The wattage used in these ranged from a minimum of 100 kw. h. to a maximum of 350 kw. h., and at the rate charged for current for cooking (1½ cents) the monthly bills ranged from \$1.50 to \$5.25, the greater number averaging about \$3. No charge is made for the stoves, the revenue for current used being credited to the cost of installation. After the stoves are paid for, it is expected that the revenue will yield a profit.

The cost for lighting the streets during 1916 was \$5,331.03, a reduction of \$1,024.43 over the cost in 1915. Of this amount, \$652.08 represents a decrease in the cost of current and \$372.35 a decrease in lamp renewals, which averaged only \$1.04 per location. Part of this decrease is accounted for by the fact that the replacing of the old arc lamps by nitrogen lamps was not completed until June.

LANCASTER WATER WORKS NOTES

Meter Readers Examine Properties for Leakage Where Consumption Is Unusual—Removing Meters for Repairs—Electric Pumping Adopted.

By JOHN T. BRAINARD.*

The municipal water department of Lancaster, Pa., in 1916 served a population of about 62,000 through 13,400 services, 5,756 of which were metered, or about 43 per cent. The number of meters has been increasing gradually during the last five years, there having been 3,557 in 1912. We have experienced most satisfactory results from the use of water meters, finding it to be the best way to sell water, as then we know just how much water we are delivering to the consumers. Water is furnished free to the highway department for flushing the streets and for fire purposes. During the year 1916, the total consumption was 2,679,370,000 gallons, of which 1,129,607,000 passed through the meters; 648,225,000 gallons being metered for manufactories, schools, hotels and other large consumers, 342,365,000 gallons for domestic use, 108,802,000 passing through meters to points without the city limits, and 30,215,000 gallons having been used (through meters) at the filter plant.

We have a regular repair shop for repairing and testing water meters. All new meters are given a test of 10 feet through a ¾-inch orifice and one of 2 feet through a 1/16-inch orifice, pressure being put on the meter of between 65 and 75 pounds.

In making the regular reading of the water meters, every inspector is instructed to note the increase in meter record since the previous reading, to note whether the consumption exceeded the quarterly minimum of \$2.50; and if it did, he is required at this visit to make a thorough inspection of the property to determine whether there are any leaking fixtures. After he has done this, he fills out a card and reports on it to the office whatever he may find by this inspection. The information thus secured is then filled out on a postal card which is mailed to the owner of the property. This system has been found to be a big help, saving hundreds of complaints at the collection office. Heretofore, if a bill was much higher one quarter than it had been the previous quarter, the tax-payer would come to the office to complain of it, asserting that there is no leak on his property; and frequently an inspection would show that there was indeed no leak, and also that the meter, on being tested, was registering correctly. There is no question that in a number of cases parties have had plumbers repair leaks after receiving the bill and before making complaint, and the department therefore is not able to prove the correctness of their belief of leaks or waste on the property. By having the inspector examine the property before the bill is rendered, these leaks can be discovered and recorded and the department then put in a position to produce this evidence in answer to the complaint.

If meters are found not to be registering or to be out of order in any other way, a return postal card is sent to the owner of the property, notifying him that it will be necessary for the meter to be taken off, tested and put in condition. No charge is made for cleaning the meter, but if the meter is found to be broken or damaged by hot water or frost, the owner is charged for the actual cost of the new parts used, but no charge is made for labor. He is requested to detach and mail at once to the department the return half of the postal card, asking the department to take out the meter and test it.

*Secretary, Dept. of Water, Lancaster, Pa.

If the return card is not received within three days, the department takes the meter out without receiving the request. When a meter is to be taken out, a job card is made out and given to the repair man, which gives him the authority to proceed to take out the meter for repairs and testing. This and many new systems used by the department have been introduced by the present superintendent, C. K. Will.

Bills are rendered quarterly, but all meters 1-inch and larger are read every month to determine whether they are in good working order, and any large meters not found to be so are repaired at once.

Since April 1st of this year, we have adopted the compound water meter for all sizes above 1-inch, and have found them to be very satisfactory. In one instance where a disc meter was replaced with a compound meter,

the revenue has been increased 40 per cent. This work will be continued throughout the year.

The department will do considerable work in connection with the pumping plant this year, which is being changed to an electric plant, although a 12,000,000-gallon pump is being held as reserve. The present equipment consists of two 10,000,000-gallon, low duty, steam turbine pumps and two 2-stage electric-driven centrifugal pumps, each of 6,000,000 gallons capacity. We are now installing six electric-driven centrifugal pumps, one 2-stage, capacity 2,100 gallons per minute, two 2-stage of 2,800 gallons per minute, one single-stage of 2,500 gallons, one 2-stage of 4,200 gallons and one single-stage of 4,900 gallons. To operate these, we are installing one 10-h. p. motor, two 75-h. p., one 100-h. p., one 200-h. p., two 250-h. p., and two 300-h. p.

SOCIETY FOR STREET CLEANING AND REFUSE DISPOSAL OF THE UNITED STATES AND CANADA

J. T. Fetherston, *President.*

Joseph R. Buchanan, *Secretary-Treas.*

Executive Committee: J. T. Fetherston, G. B. Wilson, Gus H. Hanna, John F. O'Toole, Albert T. Rhodes, Joseph J. Norton, J. E. Nantel, William F. Schwartz.

General Offices: Municipal Building, New York City.

MISSION OF THE SOCIETY.

The Society for Street Cleaning and Refuse Disposal of the United States and Canada aims to guide the thought and concentrate the effort to secure better conditions in street cleaning and refuse disposal methods. Through its conventions and publications the experience of each member is made to serve all members. Many will be saved the time and expense of experi-

menting with what others have tried and discarded. At the exhibitions, held in conjunction with the annual conventions, tests of apparatus are made by committees of experts, whose reports are available to all members of the Society. Thus will the worthy be separated from the worthless and large sums now unavoidably wasted by municipalities, in costly isolated experimenting, be saved.

The matter appearing in this department, in the issue of the fourth week of each month, is supplied by the Publication Committee of the Society for Street Cleaning and Refuse Disposal of the United States and Canada.

INTENSIVE STREET CLEANING METHODS.*

By RICHARD T. FOX.

Composition of Street Dust.—The silica consists mainly of dirt from the street, sand and gravel from the roofs of buildings, leakage from vehicles, and the fine sand used on the car tracks to facilitate the stopping of cars.

The organic matter and carbon consists of refuse, paper, manure, soot, coal and various other volatile matters commonly found in the street.

The carbonate of lime is principally from the limestone spilled from vehicles conveying building materials, etc., and likewise most of the carbonate of lime found in the dust from the sidewalk is from this source, although some of it is from the wearing down of cement sidewalks by pedestrians.

The iron content exists in the free state and the natural assumption is that most of it comes from the car tracks, although some of it is from the wheels of vehicles and from the shoes of horses and even of pedestrians.

It is interesting to compare the quantity of dust collected from a street carrying car tracks with the quantity collected from a street without car tracks. For purposes of comparison the same classification as to the sidewalk, roadway and car tracks is maintained—a space 16 feet wide through the middle of the street representing the car tracks, in the case of the street without car tracks.

Pounds of Dust Per Thousand Square Yards.

	Sidewalk.	Roadway Curbs to car tracks.	Street Car Right of Way.
Street with car tracks.....	4.30	6.00	90.00
Street without car tracks....	4.00	9.60	2.60

Street Cars Make Dust and Car Tracks Collect It.—The

proportionately large quantity of dust collected from the street car tracks is due to: (1) the excessive amount of fine sand used on the street car rails, (2) the fact that the grooved rails and other breaks in the continuity of the street surface within the car tracks catch and hold the dirt and dust, and (3) the difficulty of cleaning the grooves and the spaces between the rails in the daytime because of congestion of traffic.

This indicates the necessity for sprinkling, especially the car tracks.

The total quantity of residual dust, if spread evenly over the whole surface of the street, would amount to .15 of an ounce per square foot of street surface, which, of course, would hardly be noticed unless the wind is blowing or a fast moving motor or street car passes over it.

How Dust Is Removed.—Any system of street cleaning, to be effective, must provide every means possible, such as artificial sprinkling, flushing the streets and even scrubbing them, to combat the evil of fine dust. I find the most effective method and means of routing the dust is to flush the streets at night with a motor driven machine carrying a large tank from which the water is forced out under any desired pressure, up to 70 lbs., by a pump driven from the flywheel of the motor. Following this operation, the sidewalks are flushed and hand squeegeed and finally the gutters are washed and squeegeed to remove any dust from the roadway or sidewalk collected in low places there.

When the weather does not permit of flushing, the noticeable deposits of dust are collected by the men cleaning sidewalks. These men are provided with horse-

*Concluded from page 586.

hair brooms, by careful use of which they can collect the dust without causing a nuisance by setting it astir.

Quantity of Work.—The quantity of work (the square yards of street pavement a man can clean daily) will depend not only on the refuse accumulations per thousand square yards per 24 hours; the kind of pavement—whether rough block with open joints or a continuously smooth surface; condition of pavement—whether in good repair or not; but also on the quality of work—whether thorough or not—and on the standard of cleanliness.

The first three factors are definite matters of fact. The remaining two have so far been considered questions of opinion, and have not to my knowledge been defined.

Quality of Work.—The quality of work is a very important consideration, for a street surface not thoroughly cleaned cannot be called clean. If the horse droppings are carelessly picked up, if the dirt in the crevices and depressions of the pavements is not thoroughly removed; if, in fact, every bit of detachable refuse is not collected, the street has been merely brushed over, and the condition of the pavement falls far short of the aims of proper and sanitary street cleaning.

Theoretically, the measure of the quality of work is the quantity of material remaining on the streets after the day's work is complete, less any that has accumulated after the beginning of the sweeper's last trip over the street. But, as pointed out, there is always on the street, at the end of a day's work, a certain quantity of fine dust which cannot be collected by the means at the sweeper's disposal. This quantity varies from day to day, which is due to a number of factors not under the control of the sweeper. Therefore, unless there is a very noticeable increase in the residual dust, it is difficult to determine whether or not the sweeper is at fault.

Furthermore, there might be enough undigested portions of hay, oats and other feed, and bits of paper, together with matches, cigars or cigarette butts, and other noticable odds and ends scattered over the street to give it an untidy and unsightly appearance; and yet the total quantity of these would affect but little the amount of residual dust on the street.

Practically, then, this test for quality is not, as a rule, feasible. The practical day to day determination of this element of the work is by the eye of trained and experienced inspectors who are alert and observant.

What is a Standard of Cleanliness?—When we say a street is clean, what do we mean? In other words, what is a clean street?

Absolute cleanliness, the ideal condition, means that a street must be continuously free of dirt and dust. This condition can be maintained as far as the heavier fragments of street refuse are concerned, but the cost would be prohibitive. Moreover, it is not necessary, for this dirt is not objectionable if removed before it dries out or is scattered and ground into the pavement by traffic. The length of time it can be left on the street will depend upon the amount of the twenty-four-hour accumulation per thousand square yards of street surface; or, in other words, on the volume and kind of traffic.

The residual dust from one or the other of many sources, although it may be hardly perceptible, will always lie on the street. Therefore, absolute cleanliness is an impossibility, and will continue to be so until the sources of dust beyond the control of the street cleaner are eliminated.

The length of time any refuse other than dust is permitted to remain on the street will determine the standard of cleanliness for that street.

A standard of cleanliness, then, is an arbitrary matter, but it can be made definite for certain conditions of

traffic, etc., by specifying the length of time any refuse other than fine dust can remain on the street.

Details of the Intensive Method.—In the conduct of the work of the Citizens' Street Cleaning Bureau, we have developed, in following closely the hand collection principles stated heretofore, what may be called the intensive method of street cleaning. The aim of this method is not only to clean a street thoroughly, but to keep it continuously clean throughout the working day.

The street sweepers are assigned a definite length of street, called a route, to care for, as in the "patrol" or "block" system of street cleaning. The men are required to clean their routes thoroughly in the first hour of work in the morning, and thereafter to keep the refuse picked up practically as fast as it reaches the pavement. In other words, the work is not allowed to accumulate, but is taken care of as it presents itself.

It is apparent that to do this the number of cleanings or trips over the route formerly given under the block system must be greatly increased. This increase is expressed in the statement that the standard of work under the "block" system is based on a certain number of cleanings per day, while the intensive method requires a certain number of cleanings per hour.

The advantage gained in the latter method is that, for the same street area cleaned and the same amount of dirt collected, the length of time the dirt lies in the street is greatly decreased by reason of the added number of cleanings, and therefore a much higher standard of cleanliness is obtained.

Tests made on all the routes cleaned by the Citizens' Street Cleaning Bureau show that under our system of work it is easily possible to collect every deposit of dirt, other than that excepted, within fifteen minutes of its appearance on the streets.

The standard of cleanliness, then, for our streets, under existing heavy traffic conditions, is that the street shall be thoroughly cleaned and that no dirt, other than that excepted and the fine dust, shall lie on the street over a maximum time of fifteen minutes.

While our standard of cleanliness is defined and can be readily checked within close limits, and is checked from time to time, the day to day determination of this factor is by the eye of the foreman. The standard of cleanliness is so fixed in the minds of the foremen that they can tell at a glance whether or not a sweeper is abreast of his work.

How Standards are Maintained.—The standards of cleanliness and the quality of work being specified, a block-by-block survey of the quantity of refuse accumulating per twenty-four hours, the kinds of pavement, the condition of pavement and other factors affecting the amount of work a sweeper should do as a daily task will furnish the information for the uniform allotment of work for every type of conditions.

Frequent and thorough inspections must be depended on to obtain daily the quality of work and to maintain the standard of cleanliness.

In fact, if the work is fairly proportioned to the individual laborer, and he is carefully instructed in his duties, the proper cleaning of the streets resolves itself into a matter of a thoroughly instructed and disciplined organization continuous in its management, and of adequate and trained inspectors.

A standard of cleanliness, then, for a city will depend not only on the amount of money appropriated for street cleaning, but on the ability of the head of the street cleaning forces to apportion the work to the individuals to the best advantage, and to build up an organization that is efficient in supervision, inspection and in thorough cleaning.

The WEEK'S NEWS

State Highway Developments in Washington, South Carolina, Florida and Wisconsin—Winning Fight Against Tuberculosis—Cleveland to Improve Municipal Electric Plant—Canadian Provincial Commission Buys Big Power Plant—The Kansas Gas Case Further Tangled—Fires in New York, Pocatello and Clifton—Nebraska Cities Get Laws from Legislature—Business Men to Advise City on Finances—Cleaning Up Butte's Bad Housing—Los Angeles Municipal Markets.

ROADS AND PAVEMENTS

State Road Financing in Washington.

Olympia, Wash.—The state board of highway commissioners has provided for the expenditure of \$2,578,731 on state roads during the next two years. Of this amount, \$1,812,052 has been appropriated by the state, the balance to come from the government under the federal aid road act, from the different counties affected and from railroads. The board has approved the road program as mapped out and submitted by highway commissioner James Allen, and the commissioner has announced that actual construction will be commenced just as soon as the weather will permit. The first work to be taken up by the state will be on the Pacific highway between Olympia and Tacoma, when the paving of three and one-half miles of that highway, from the end of the present pavement near Olympia, is begun. For this work the state has appropriated \$56,000, and a like sum will come from the government as federal aid. The budget also provided for work to be done on the Pacific highway between Olympia and Seattle at a cost of \$57,350. It has been estimated by the highway board that approximately \$143,375 will come to the state from the counties for road building purposes and approximately \$22,000 will be due the state from the different railway companies as financial aid in the construction of grade separations. All of the money will be spent on main highways and none of it will be used for the construction of new roads or branch roads from these main arteries of travel. It was decided early in the year that no new roads would be begun until the present road program was completed.

Economical Public Improvements in Flint.

Flint, Mich.—Flint invested \$610,609.26 in street improvements, sewers, bridge work and buildings during the last fiscal year which ended February 28, according to the annual report of city engineer Ezra C. Shoecraft. Most of the paving of streets was done with sheet asphalt for which the city is equipped with its own asphalt plant, there being 7.85 miles of this kind of pavements built, while there were 0.44 miles of pavements of brick and 0.10 miles of asphalt block. Paving work was done on 39 different streets. Sanitary sewers constructed covered a distance of 12.65 miles and storm water sewers extended a distance of 7.9 miles. The length of new sidewalks constructed was 16.85 miles, at a cost of \$47,372.90, while new crosswalks added 0.65 miles at a cost of \$2,542.93. There were also graded 1.7 miles of streets. In the original estimate of sewer work the cost was placed at \$269,947.30, while the work completed by day labor actually cost \$205,923.77, a difference of \$63,050.53 in the city's favor. The city asphalt plant in 1916 furnished mixed material for 103,400 square yards of sheet asphalt pavement, as against 67,436 yards in 1915. The cost per square yard in 1915 was 60 cents and in 1916 was 67 cents, an increase of seven cents. The lowest bid in 1915 was 95 cents, making a saving that year of 35 cents per square yard or \$23,602.60, while in 1916, while no bid was received, it was figured that if bids had been received on the same basis the lowest would have been \$1.05 due to the increased cost of labor and material, which would make a saving of 38 cents per square yard, a total saving for the 103,400 yards. The Otisville gravel pit, operated for the first time last year, turned out 950 loaded railroad cars of gravel which was now 50 per cent less than could have been turned out had the railroad company been

able to furnish cars, it is reported. The city was forced to buy nearly as much gravel outside as was used from the city pit at Otisville because of the car shortage. Despite this fact, the report states, the city effected a saving of \$11,000 in its gravel, comparing the actual cost with the cost had it all been purchased outside. In 1915 the city's gravel wagons at the side of the car in Flint cost \$2.32, while in 1916 the same was charged at \$1.70. Street signs were placed at every street intersection in the city at a cost of \$2,608.77. Other jobs done by the department during the year are enumerated as follows: Hamilton dam rebuilt after the flood last spring at a cost of \$672.35; eleven streets graded with steam shovels at a cost of \$6,603; work was started on the construction of an extra spillway at Thread Lake to prevent a repetition of flood danger experienced last spring. Plans for the 1917 work which will involve an expenditure of more than \$700,000 have been prepared by the office force of the department since last November. The 1917 schedule of work calls for approximately 35 miles of sewers, 150,000 square yards of pavements, 1,000,000 square yards of sidewalks and much miscellaneous work. The department now is conducting a survey of the Flint River with the idea of gathering data which will aid in the preparation of plans for a sewage disposal plant. It is the plan of the city to stop the discharge of raw sewage into the river as soon as possible.

Motor Vehicle Regulation in South Carolina.

Columbia, S. C.—In accordance with the act creating a state highway department, every owner of a motor vehicle and every dealer in motor vehicles is required to register with the state highway engineer on or before the first of July, 1917. The law provides that each owner of a motor vehicle and each dealer in motor vehicles shall make application to the state highway engineer, J. Roy Pennell, for registration and license. The law provides that on and after the first of July any person who drives an unregistered motor vehicle on any public road, or street, or highway in the state shall be deemed guilty of a misdemeanor and shall be punished by a fine of not more than \$25 or imprisonment for not more than 15 days for each and every offense. The registration fees for owners of motor vehicles will be 12½ cents per horsepower, based on A. L. A. M. rating. The registration fees for dealers in motor vehicles will be \$15 for each make of motor vehicle sold. The registration and license fees paid to the state highway engineer are in lieu of all other state, municipal and county licenses for the entire year of 1917.

Improved Roads in Florida.

Tallahassee, Fla.—According to data compiled by the state road department of Florida, this state has at the present time approximately 4,020 miles of hard surfaced roads and 3,948 miles of roads graded and practically ready for surfacing, making a total of 7,968 miles of roads that are classed as improved roads. In addition to this there are reported to be under construction, but unfinished, approximately 1,256 miles of roads, which, when completed, will bring the total of improved roads in Florida up to 9,224 miles. Of the roads completed to date, according to reports received by the department, 6,312 miles have been constructed with funds realized from county and district bond issues and 1,656 miles have been constructed with funds realized from the general road and bridge fund tax of the counties reporting. These figures apply only to roads constructed and under construction outside of in-

corporated cities and towns. Of the completed roads, the following shows the mileage surfaced with various materials: Brick paved, 378 miles; rock paved, 1,070 miles; rock paved, treated with oil, 92 miles; gravel paved, 42 miles; concrete paved, 12 miles; modified asphalt paved, 180 miles; shell paved, 538 miles; sand-clay paved, 1,708 miles; graded but not paved, 3,948 miles. Of the authorized but unfinished roads, the materials being used are as follows with the mileage of each class of material: Brick, 105 miles; rock, 198 miles; concrete, 23 miles; modified asphalt, 484 miles; sand-clay, 236 miles; graded roads, 210 miles total under construction, 1,256 miles. In addition to the above several counties have authorized county and district bond issues for rated improvement and in some instances contracts have been awarded, but the work has not yet started, so it is safe to say that the total improved roads completed and authorized, as well as those under construction, will be well above 10,000 miles. Of the total completed and to be constructed under bond issues, funds to the amount of approximately \$17,266,553 have been authorized by the counties and districts from the year 1901 up to the present time. The total amount of road and bridge bonds authorized prior to the year 1914 was approximately \$5,385,000. During 1914 road improvement bonds were issued to the amount of approximately \$2,400,000; 1915, \$3,606,203; 1916, \$4,743,350, and already in 1917, \$1,132,000. Of the grand total, the bonds issued by counties as a whole amounted to \$11,410,000, and the bonds issued by special road and bridge districts amounted to \$5,856,553. Not one dollar of these funds were expended under the supervision of the state road department, as that department was only created by the legislature of 1915, and was given no authority to build or supervise the construction of roads. There is little doubt that if the large sums of money used in road construction during the past fifteen years had been expended under some central authority there would have been a considerable increase in road mileage, and there appears no doubt that much more substantial roads would have been constructed. The legislature will be asked to enact legislation extending the powers and authority of the state road department, so as to give that department authority to designate certain roads as state roads and others as state aid roads, also that the department be authorized to use a certain number of state convicts on the public roads, to be constructed with the joint funds appropriated by the federal government and the state.

Wisconsin's Highway Plans.

Madison, Wis.—The Wisconsin highway commission estimates that 1,245 miles of road construction will be completed this year and that 350 bridges will be built. This work is entirely separate from the truck line work to be constructed under the federal aid law. In a statement compiled by engineer A. R. Hirst the total fund available for road construction alone is \$3,700,000. Following are the number of miles and character of roads to be built this year:

Graded but not surfaced.....	485 miles
Concrete	65 miles
Stone macadam	210 miles
Gravel macadam	320 miles
Other permanent surfaces.....	65 miles
Non-permanent surfaces	100 miles

Total for 1917.....1,245 miles

The highway department estimates that there will be about 350 state aid bridges built this season at a cost of \$540,000. In addition to this there will be an equal number of county aid bridges built at a cost of about \$560,000. The total estimated expenditure under supervision of the highway division this year will be \$4,760,000. Surveys have been made of about 1,000 miles of state highway construction, and the plans are ready for about 900 miles. There still remains about 322 miles of road to be surveyed and planned. The commission has prepared plans for 117 state aid bridges and seventy-three county aid bridges.

Tentative plans for the construction of Wisconsin's

5,000-mile highway to criss-cross every important town and city in the state, have been completed by the state highway commission. Their adoption, however, is subject to change by the commission itself, a legislative committee and the approval of Gov. E. L. Philipp. The plans are for a complete network all over the state. The main arteries follow the logical trade routes, and are broken up into branches to reach every part of the state and provide an outlet and inlet for the commercial and industrial resources of Wisconsin. The highways enter Wisconsin by ten roads from adjoining states. Five enter from Illinois—south of Hazel Green, south of Monroe, south of Genoa, and south of Kenosha on the lake. Three enter from Minnesota—at Interstate park, near St. Croix Falls, southwest of Superior, and at Hudson, opposite St. Paul. One branch from Shellburg to Grantsburg, stops a few miles short of the Minnesota line. Iowa is connected by two lines—from Platteville to Dubuque and Hazel Green to Dubuque. Madison is logically the meeting point of the important branches of the trunk line. Seven roads converge here from all parts of the state. Fond du Lac has six highway branches converging in it, while Oshkosh, Appleton and Manitowoc have four each and Berlin has two.

Sidewalks Must Be Six Feet Wide.

Buffalo, N. Y.—Sidewalks, which will be constructed in the future, must be six feet wide, commissioner Arthur W. Kreinheder has decided as the policy of the department of public works. Most sidewalks range in width from 3½ to 4 feet. Those that are that wide and are in good condition need not be widened, but sidewalks, which are beyond repair and which must be reconstructed must be six feet wide and Mr. Kreinheder intends that all the sidewalks in the city shall in the course of time be uniform. Commissioner Kreinheder said: "Our principal reason for inspecting the sidewalks was the fact that each year there are filed against the city numerous claims for damages for personal injuries due to falls on defective sidewalks. There is no doubt that there are many sidewalks in the city that are out of repair and some of them are hopelessly beyond repair. These sidewalks must be replaced. As long as it is necessary to lay many new sidewalks it is well to establish a policy for a uniform width. Sidewalks six feet wide are suitable, particularly in the downtown district, and hereafter any sidewalks that are laid must be six feet wide or they will not be approved by the department of public works." Commissioner Kreinheder expects to send out many notices to property owners to have their sidewalks reconstructed. If they do not comply with the notice the city will proceed with the construction of the new walks and then assess the cost against the property owners. If the city does the work it will cost the property owners 10.45 cents per square foot. If they have the work done themselves, it will cost them more than the city's price.

SEWERAGE AND SANITATION

Does Not Fear Poliomyelitis This Summer.

New York, N. Y.—The department of health, in reply to numerous questions as to the possibility of the recurrence of a poliomyelitis epidemic this summer, has issued the following official expression of opinion: "Probably the most significant thing regarding last year's outbreak of poliomyelitis in New York City was the fact that in over ninety-six per cent of the cases there was only one case of this disease in a family. It is probable that such a condition can result from only one of two things: either a very low degree of infectivity of the infectious material or a very high degree of immunity in the greater part of the population. The fear that was produced by the outbreak was out of all proportion to the severity or the extent of the cases. It is estimated that there are 1,600,000 children under fifteen years of age in New York City, so that the total number of children affected with poliomyelitis last year was one half per cent of the child population. Moreover, notwithstanding the outbreak of poliomyelitis, there were actually 1,052 fewer deaths of babies under one year of age in New York City in 1916 than there were in 1915,

and there were also actually 324 fewer deaths of children under five years of age in 1916 than there were in 1915, although seventy-eight per cent of all reported cases of poliomyelitis occurred in children under five years of age. The death rates of children under one year of age and under five years of age were lower in New York City last year than they have ever been before in the history of the city. The history of poliomyelitis shows that it appears in epidemic form at fairly regular intervals. New York City suffered an outbreak of the disease in 1907, again in 1912 and again in 1916. The Department of Health of New York City does not expect another epidemic outbreak of the disease in New York City in 1917. It is possible that this may occur in other localities in the United States where it was more or less quiescent last year. Cases of poliomyelitis are occurring constantly, and have been for many years. They will be reported in the city from time to time during the summer, but this department is of the opinion that undue anxiety regarding another widespread outbreak of the disease is not warranted as far as this city is concerned."

Vote Bond Issues to Fight Mosquitoes.

Toledo, O.—The city will issue \$20,000 in bonds to help drive mosquitoes from Toledo. An ordinance to provide for the purchase of oil to be placed in sewers has been passed. Dr. T. L. Ramsey, an authority on mosquitoes, states that the tentative plans of the health commissioner are to form a commission of three men—a chief oiler, a house-to-house inspector and an expert for elimination in swamps. He said a force of fifteen men probably would be at the disposal of each director in the campaign. A communication from the health commissioner asserts that 1,500 negroes and 200 Mexicans imported to Toledo as laborers may be malaria carriers and spread an epidemic through mosquitoes. The four per cent bonds will be in the denomination of \$1,000 each, dated May 1 and payable in four years. The question has been confronting the city for several months. The Commerce club has been particularly active in the anti-mosquito drive.

Tuberculosis Death-Rate Decreases.

Washington, D. C.—Mortality from pulmonary tuberculosis in the United States appears to be decreasing steadily. The death rate for 1916 was given as 150 for each 100,000 population in New York; the figure for the country was given as 146.8 for each 100,000. A marked increase in the number of organizations working on the problem—the sanatoria and clinics—is noted. The decrease in the death rate from 1906 to 1916 was from 195 to 146.8 for each 100,000. Increases were noted conditionally in Detroit, Fall River, Newark and Worcester, Mass. Among the cities which showed a decrease were Denver, Los Angeles, Nashville, New Haven and Washington. New Orleans showed the maximum death rate in the results tabulated, 261.7 for each 100,000. The greater susceptibility of the colored population as noted in figures throughout the south is believed to account for this. An analysis of the figures showed the death among whites to be 157.9 per 100,000, as against 414.5 for the colored population.

Medical Inspection of Food Handlers.

Newark, N. J.—As a means of checking the spread of communicable disease, all persons engaged in the handling of food products will be required to have a medical certificate, issued by the board of health and filled out by a physician. An ordinance making this mandatory has been recommended for adoption by the food and drug committee of the board. The certificates will be supplied by the board to the employers free, and each one will be good for six months. A fine of \$50 is provided for first offenses and \$100 for each subsequent offense. The ordinance says that no person, firm or corporation "conducting a hotel, restaurant, lunch room, lunch counter, lunch or food wagon or barrow, or any other food container, grocery store, candy store, soda fountain, delicatessen store, dairy, creamery or any other place where food is handled or produced for sale or consumption, shall employ any person or persons or personally handle foodstuffs before having filed with the board of health a medical certificate

from a physician approved by the board of health, stating that such person or persons are free from communicable disease." Dr. Elmer G. Wherry, of the board, stated that the board knew of 123 food handlers suffering from communicable diseases, among whom thirty-seven were bakers. He also said that eighty-three bartenders and thirty-nine cigar makers are suffering from communicable diseases.

WATER SUPPLY

Reduces Water Rates to City.

Pittsburgh, Pa.—Assistant city solicitor Charles K. Robinson has announced that the South Pittsburgh Water company has agreed to reduce its rates and sell water to the city so that the latter may resell it to the people of the district supplied. The company will pay for meter reading in homes of city patrons and instead of sending the bills to the consumers will submit statements to the city. He said that the city's share of the proposition will amount to about \$40,000 a year, that representing the difference between the two rates for all city consumers served by the company. "The minimum flat rate per year now charged by the company is \$15," Mr. Robinson said. "It is agreed to reduce this \$1 a year until it reaches \$11. An additional discount of 5 per cent will be given. The present meter rates for private consumers served by the company is 37½ cents per 1,000 gallons. The maximum city rate for meter for domestic service is 18 cents. The company promises, within four years, by gradual course, to reduce the rate to 27½ cents."

State Health Board Finds Chlorination Effective.

Guthrie, Okla.—Dr. John W. Duke, commissioner of the Oklahoma state board of health, has issued a bulletin on "Pure Water for Small Towns." In part he says: "The essential factors for the purification of water for drinking purposes are chlorination and filtration. Each is essential. The filtration clears and purifies the water and eliminates turbidity. Filtration, however, cannot be depended upon to kill disease producing germs. This is the province of chlorination. In a number of tests made at the Oklahoma State Laboratory it was found that water unfit to drink before chlorination was perfectly safe after this treatment. In fact, it is a conservative statement that through use of filtration and chlorination an absolutely safe water supply can be guaranteed."

Carthage Water Supply Found Pure.

Carthage, Mo.—A report on the analysis of the Carthage city water has just been given out by the state board of health of Kansas, and is very favorable indeed. This analysis was made in connection with the analysis of a number of samples of water from points in states adjoining Kansas in order to make comparison with the Kansas waters. The report states that the Carthage water is very pure and excellent for drinking. The bacterial examination showed no bacteria of any significance. The chemical analysis showed 22.66 grains of solids to the gallon and these are not injurious. The report was made to U. L. Landreth, superintendent of the water service at the Carthage plant. The Carthage water comes from six deep wells from 1,000 to 2,000 feet deep. The shallower wells tap a strong vein of artesian water at about 950 feet. The deeper wells tap also veins from 1,500 to 1,900 feet in depth. The water in all the wells seems identical in composition and quality. A vein of shale passed through in each well at about 400 feet of depth serves to seal out all surface water from the wells. The wells are cased for the first 400 feet, the foot of the casing being pounded tightly into the shale bed thus shutting out any chance for water about that point to get into the wells.

Water Board Wants Payment for City Service.

Erie, Pa.—That the city soon will be called on to aid financially in the operation and maintenance of the water works is indicated by the fiftieth annual report of the water commissioners. The commissioners comment on the fact that extensive improvements by the water department and city now under way will have to be financed out of cur-

rent revenues and special stress is laid on the fact that the city had over \$40,000 worth of service last year for which nothing was paid. "The work of taking care of the mains and such changes to them as will become necessary by reason of the building of Millcreek tube, and subway streets, will have to be paid out of the current revenues, which, together with the improvements, contracted for and contemplated and the probably greatly increased cost of operation and construction, that now confronts us, will make the problems of financing from present revenues increasingly difficult," the report says. The city is charged with a total debit of \$53,105.35, of which \$10,000 was paid to the sinking fund commissioners to aid in city maintenance this year. Of the balance \$36,800 is charged for service at 919 fire hydrants and the remainder to parks and miscellaneous items. Growth of the city is indicated by an increase of 13.9 per cent in the pumpage of water during 1916. The total pumpage was 6,871,778,508 gallons, a daily average of 18,775,329, or a daily increase of 2,488,150. Of the total amount pumped 2,719,041,447 gallons was furnished through meter measurement, an increase of 785,502,104, or nearly 40 per cent increase. The big increase is explained by the extraordinary amount used by manufacturers and the replacement of all old meters. During the year the commissioners spent \$209,163.43 in construction; \$24,442.97 in maintenance; \$68,467.69 in operating; \$15,306.31 in accounting; \$4,548.63 for general expenses; \$10,000 in sundries, and \$504.85 in legal services. Since the beginning of the works \$6,358,782.70 has been spent on the system. Receipts of the department during the year totaled \$382,511.14, of which \$375,134.09 was from water rents. Disbursements, including the \$10,000 gift to the city, totaled \$332,433.88, leaving a balance in the city treasury of \$70,632.89. The increase in receipts from all sources was \$50,524.36. The department filtered 6,881,170,000 gallons at a cost of \$2.02 a million gallons. J. S. Dunwoody, superintendent of filtration, calls attention to the increasing amount of water to be treated and states that it is becoming increasingly difficult to deliver water through the filters during the time that the plankton growths are numerous. He suggests the advisability of treating the water during that period to destroy the growth before it reaches the filter beds. An increase of 1,902 users of water is noted. The department now supplies 24,633 consumers, of whom 20,656 are families and 998 stores.

STREET LIGHTING AND POWER

\$672,500 for Cleveland's Light Plant Improvements.

Cleveland, O.—Council has passed and the mayor has approved an ordinance authorizing bond sales for a sum not to exceed \$672,500 for enlarging and extending the municipal electric light and power system. The money will be expended approximately as follows: building and foundation, \$160,000; new turbine (10,000 k. w.), \$120,000; condenser, \$50,000; boilers, \$140,000; switchboard and auxiliaries, \$60,000; transformer, \$15,000; cable, \$25,000; wire, \$40,000; poles and fittings, \$40,000; engineering and incidentals, \$22,500.

Referendum on Light Contract Legal.

Wilkes-Barre, Pa.—The supreme court has decreed that the petition of more than four thousand citizens asking that the street lighting contract be referred to the residents of the city, who by their petition have invoked the initiative, was legal and proper. The supreme court decision reverses the opinion of the majority members of the Luzerne court and sustains the position of Judge Garman, who dissented at the time. Wilkes-Barre city had advertised for bids for street lighting. The old company submitted one bid and the new company another. The new company was the lower bidder, but was denied the contract, the claim being that the concern would be unable to operate a plant within a period of two years. After the old company had been awarded the contract, more than four thousand citizens, or the required 20 per cent, sought to invoke the initiative and prepared their petition asking that the question be referred to the people in a special elec-

tion. The petition was not left at the city hall, but was signed at large. When it was presented to council it was rejected on the claim that the law had not been complied with. It was held by the city authorities that the law demanded that the petition be left in the city hall and there signed by citizens, who would be forced to take an oath. After council's rejection of the petition the officials of the new light company went into court and asked for a mandamus to compel the mayor and members of council to accept the petition and hold up the contract. The Luzerne judges refused to grant the mandamus, claiming that the petitioners had not obeyed the law. An appeal was taken to the supreme court with the result in favor of the petitioners. The court's opinion holds that the petition was legal according to its construction of the "Initiative and Referendum" act. The court says: "There is no ambiguity or uncertainty of purpose in the referendum article. It plainly declares that no ordinance shall go into effect before ten days after its final passage, and if the requisite protest is presented to the council within that time, the operation of the ordinance is suspended, and if not entirely repealed it must be submitted to the vote of the electors of the city."

Canadian Commission Buys \$20,000,000 Plant.

Niagara Falls, Ont.—The Ontario Hydro-electric commission has closed the deal for the purchase of the Ontario Power company's plant and holdings. The price paid by the government for the plant is reported to have been \$20,000,000. The commission has assumed control of the plant and it is now being operated directly under its supervision. Many of the officials of the company were offered positions under the commission's regime. Several accepted but others declined. It is reported that the commission has already inaugurated a system of retrenchment and the probabilities are that a number of salaries will be cut. The plant exports a quantity of power to the United States. Whether the change in ownership will affect this exportation it has not been announced. Those in close touch with power affairs claim that it will.

State Court vs. Federal Court in Kansas Gas Tangle.

Topeka, Kan.—A deadlock over the gas rates exists between the Kansas court and the United States court as a result of the writ mandamus issued by the Kansas supreme court, which holds an opposing view to that recently held by Judge Booth, of the United States district court, that the public utilities commission had no power over the Kansas Natural and cannot regulate the service or rates of this company or any of the distributing companies receiving gas supplied from it. The Kansas court held that there could be no changes in rates for gas without consent of the utilities commission. The decision was handed down in the suit of the commission against the Kansas Natural and the Olathe Gas companies. Federal Judge Wilbur Booth has held that the 28 cent gas rate established by the Kansas public utilities commission is non-compensatory, confiscatory, unreasonably low and in violation of the Federal constitution. The court held that the commission went beyond its constitutional powers when it established the rate. Judge Booth held that the distribution of gas in Kansas by the Kansas Natural Gas company is interstate commerce and not subject in any manner to rulings of the Kansas commission. The Federal court decision set aside the 28 cent rates established by the Kansas commission December 10, 1915. It left to the gas company the right to establish such rates as it deems advisable.

Municipalities Join in Gas Rate Protest.

Oil City, Pa.—The officials of the northwestern Pennsylvania cities of Oil City, Titusville, Warren, Erie, Meadville, Franklin, Corry and Sharon have united in a protest to the state public service commission against the proposed increase of five cents per 1,000 cubic feet of gas supplied by the local companies served by the United Natural Gas company with headquarters in this city. The raise in rates was announced April 12 to become effective May 15. The protest states that the proposed rates "are excessive

and unreasonable and would yield excessive and unreasonable return and be an unjust burden upon complainants and other consumers." It also claims that "the clause requiring consumers of gas for industrial and commercial power service, including gas engines and steam boilers, to agree that said service may be suspended or discontinued at any time between the first day of November of any year and the first day of April following for the benefit of domestic service, is not a just, suitable and reasonable classification as is permitted by the Public Service company law under the act of July 26, 1913, of Pennsylvania, but gives an undue and unreasonable preference or advantage to one person, firm or corporation over another, and is unjust, unlawful and in violation of section 8 of article III of the Public Service company law." The municipalities ask that the commission investigate the company's financial operations and costs.

FIRE AND POLICE

New York City Hall Cupola Burnt.

New York, N. Y.—Roofers repairing the cupola on the City Hall when they left off work neglected to put out a fire in a charcoal pot. In some manner this fire ignited some loose charcoal in one of the gutters of the roof and in a few minutes the old wooden cupola was in flames. For two hours firemen tried to put it out, and only succeeded after the entire cupola was destroyed, leaving only the stone supports. The City Hall itself was deluged with water, but the objects of art stored therein, including valuable paintings, were not damaged. Altogether, the damage is estimated at \$25,000. The fire was spectacular. Dense volumes of smoke blown by the strong west wind enveloped the entire building at times, and drew an enormous crowd. Hose stretched across Park Row held up surface car traffic on that street for hours. Before the cause of the fire was determined, there were many rumors that plotters had attempted to destroy the City Hall. Fire commissioner Adamson sent in the alarm by telephone. It was the second time the City Hall tower was destroyed by fire. During the celebration attending the laying of the Atlantic cable in 1858 fireworks set fire to the cupola. The new cupola was then built larger in order to put in the clock, which was destroyed in the last blaze.

180 Autos Burnt in Garage Fire.

Pocatello, Ida.—One of the most disastrous and spectacular fires that has occurred in the northwest in several years completely wrecked a big garage and destroyed about 180 automobiles. The amount of loss involved is over \$300,000. Most of the cars were partially covered by insurance, and but two or three were removed from the building, which was packed to the limit. When the wall at the northeast corner of the building, where the office of the garage company was located, fell, three men were pinned under the bricks and building material. Two men are volunteer firemen. The cause of the fire is not known, but it is thought it was due to a gasoline explosion of some kind. Five streams of water were kept playing on the flames, but due to the gasoline and other inflammable materials little headway could be made by the firemen. When the fire broke out it is stated no one was in the building, the night man having been summoned out on a taxi call and when he returned and ran his car into the garage he discovered the fire. After he had sent in the alarm he did not have time to get his car out of the building as the flames spread so rapidly.

Department Rivalry While House Burns.

Clifton, N. J.—When a fire of unknown origin broke out in a large dwelling house members of Clifton fire company No. 5, whose headquarters are only a block from the scene of the blaze, responded to a still alarm. There was a terrific explosion and immediately afterward the entire rear of the house was in flames. Somebody telephoned to Passaic headquarters and chief Bowker responded with one company. Chief Bowker's men immediately put a siamese coupling on the hydrant at the corner opposite the burn-

ing house and began unloading their hose to take three streams from the hydrant. A group of members of the Clifton company arrived at the hydrant and the leader of the Clifton group shouted boastfully: "Oh, to h— with Passaic; we'll handle this fire ourselves." Chief Bowker calmly ordered his men to remove their hose and led them away. After a time the members of the Clifton company on the scene coupled a single line of hose to the hydrant and with another string from the front of their quarters fought the flames, which got away from them, mushroomed through the entire building and shot high in the air. Then, half an hour after they had first reached the scene, the members of company 5 decided to call for help and an alarm was sounded bringing company 1 to the scene. The two Clifton companies then fought a hard, uphill battle, but the house was gutted. Fire chief Bowker said later: "I'm tired of going to Clifton to be humiliated and hereafter when we are called out to fires somewhere along the outskirts and I find they are in Clifton I will order the men to turn right back to headquarters. When we are called out we don't know where the fire is until we get there. If we find it is over the line we only too gladly assist in putting it out. We are not after any glory, but if we can be of assistance I am always willing to help with apparatus and men."

Fourteen Houses Burn.

New York, N. Y.—Swiftly spreading flames in a recent Brooklyn fire and delay in sending in a proper alarm resulted in the destruction of fourteen houses and the damage by water of four others. About 125 people were rendered homeless. So swift was the progress of the conflagration that it left the tenants little time to look after their families and household goods. The police say that the fire had its origin from some unknown cause in a kitchen of a two-story two-family frame house. The flames found the line of least resistance in the series of garrets or cock-lofts extending through the block, and they ate their way through the thin partitions from one garret to another. Only the upper parts of the houses were burned. The first floors were unscathed. The man who turned in the alarm did not understand the workings of the type of box, and after turning the handle he heard the bell ring and thought the alarm was safely in. He should have pulled the hook. The loss was estimated at between \$50,000 and \$75,000.

GOVERNMENT AND FINANCE

Legislation for Nebraska Cities.

Lincoln, Neb.—Governor Neville has signed the following bills relating to affairs of municipalities: One bill authorizes counties to establish forest areas and another permits cities of second class to own auditoriums. Other bills permit cities of second class to issue water bonds on three-fifths vote and permit use of paved streets by tractors whose wheel ribs are not less than two and one-half inches wide and not more than one and one-half inches thick. S. F. 118 provides city manager plan may be adopted by cities of from 5,000 to 25,000. S. F. 51 permits cities of 5,000 to 25,000 to vote bonds up to \$150,000 to buy or establish municipal plants by vote of 55 per cent of electors. The Omaha water board is allowed by legislation to make and sell ice, while a charter provision allows it to purchase the light plant by a vote of the electors. Cities of the second class and villages owning plants may sell electricity and power to persons or corporations, according to another bill.

Telephone Franchise Decision Favors City.

Columbus, O.—The court of appeals has recently affirmed the decision of the common pleas court in the case of the Ohio State Telephone Company against the city of Columbus, defendant in error. This is a finding for about \$95,000, principal and interest, for the annual payments due the city from the company under its franchise for the period from 1905 to 1914, inclusive. The franchise provides that during the first week in January of each year the telephone company shall pay to the city a certain per

cent of its gross receipts of the preceding year for telephone service in the city, the percentages to be one per cent of the first \$50,000, two per cent of the second \$50,000, and three per cent of its receipts in excess of \$100,000. City attorney Scarlett says: "When the Citizens' Telephone Company was endeavoring to secure a franchise from the city in 1899 it was argued that a second telephone system would mean that much more wear and tear upon the streets in that the streets would be again torn up for its conduits and pole lines, which seemed unnecessary, as there was already one company in the field to furnish the service. It was also argued that two telephone systems would mean increased overhead expenses and other duplications in cost, which would mean that complete telephone service, namely, the service of two companies, would be more expensive than one. To meet these two arguments, the company offered first, to pay a certain fixed per cent of its gross receipts to reimburse the city for the additional expense in the maintenance and care of its streets incurred by reason of the operations of the company, and second, the company agreed never to charge in excess of certain rates for telephone service, thereby giving assurance that the charge for double service would not be exorbitant.

It paid the percentages for several years under protest, and then refused to pay for the year 1904. Suit was brought for the amount due for that year and was finally affirmed by the supreme court in 1911 or '12. In the spring of 1915 the city brought suit for an accounting from the year 1904 to 1914, inclusive, the company refusing to pay, claiming defenses additional to those decided by the supreme court. This is the case that was affirmed by the court of appeals. The principal contention of the company has been that it obtained its right to use the city streets from the state; that the city gave it nothing, and that therefore there was no consideration for the several agreements on its part to be performed. This was based upon the original telephone statutes authorizing the construction of overhead lines, and which provided that if the company and the city could not agree on the mode of use, then such mode of use could be determined by the probate court. These statutes specifically limited the consideration the city could receive. The company has persistently refused in these cases to recognize the change in the situation created by the conduit statute passed a few years prior to the granting of this franchise. The statute provided that a city could require a telephone company to take its overhead lines from the streets, when a conduit system was constructed by the city, and that the consent of the city must be obtained before the company itself could lay conduits, and, of course, before it could use the city conduits. This meant that the city could give or withhold the grant of the valuable right of using its streets, and such a grant was of course a valuable consideration in return for which other considerations and agreements for the benefit of the city and the public could be received by the city. The supreme courts of the various states have almost unanimously held that the giving of such a consent is sufficient consideration for the payment of annual amounts, whether in lump sums or in percentages of the gross receipts, and in this case the courts of Ohio have joined with those of the other states. In addition to this question of consideration, the company claimed that the contract made by the old board of public works was invalid as the board had no legal existence; that the city was not entitled to percentages of the rentals in the territory annexed since the granting of the franchise; that the yearly percentage was a tax in violation of the state and United States constitutions, etc., etc. On all these questions the common pleas court and court of appeals held against the company."

Tax Amendment Election Result Illegal.

Springfield, Ill.—Circuit judge Norman L. Jones has handed down a decision in the circuit court of Sangamon county holding in effect that the tax amendment proposition as voted on by the people of the state last fall did not carry. The decision sets aside the official return of the state canvassing board, which held that the tax amendment had carried inasmuch as it had received a majority

of the votes cast at the election for members of the general assembly. Attorneys for the defendants took exceptions to the court's decision and asked an appeal to the supreme court. The appeal was allowed. The election had been attacked in a friendly way in a petition filed several months ago by state's attorney C. Fred Mortimer of Springfield, asking that the court determine whether or not the state canvassing board, consisting of the secretary of state, the state auditor, the state treasurer and the attorney general, had used the correct test in declaring that the amendment had passed. The board used the vote on the members of the general assembly as a criterion to determine if the amendment had carried. The petition questioned the correctness of this method and alleged that if the amendment vote had been compared with all of the votes cast, or the highest vote cast for any office or officer at the fall election, the criterion might be accepted as legal. If the supreme court upholds Judge Jones in his decision, members of the Tax Amendment league of Chicago will make an effort to gain the object for which the amendment was intended through the constitutional convention, providing the people of the state authorize the convention by a majority vote in the fall of 1918. If the high court reverses judge Jones, members of the Tax Amendment league will consider the advisability of asking Governor Lowden to call a special session of the legislature this summer in an effort to secure desired legislation under the provisions of the amendment. It was the purpose of the amendment to simplify methods of taxation so as to make it more difficult for tax "dodgers" to conceal personal property from taxation.

Advisory Business Men's Committee on Finances.

Springfield, Ill.—Five of Springfield's leading business men have consented to become members of a permanent advisory committee on city finance at the request of J. Emil Smith, commissioner of accounts and finances. They will lend their business experience to the city hereafter in solving the many municipal problems. The men who were asked by Commissioner Smith to serve on the committee and all of whom have signified their willingness to do so, are: J. H. Holbrooks, vice president Ridgley National bank; Jacob Bunn, president Illinois Watch company; Logan Hay, former state senator; George Pasfield, real estate dealer and owner, and George E. Keys, vice-president of the Farmers National bank. Since his election as commissioner, Mr. Smith has made a number of changes in the financial administration of the city, but it is generally believed among his associates that the step just taken will be more far reaching in its effects than any innovation hitherto attempted. The five men have been members of a committee which recently investigated the financial aspect of the city commission's improvement program.

MISCELLANEOUS

Health and Fire Departments Condemn Houses.

Butte, Mont.—Officials of the city, including fire chief Fred Martin, Dr. W. C. Matthews, inspector John Riordan and several others, as well as state fire marshal A. E. Eklund, are continuing their campaign of investigation of property in this city considered in its present state to be not only insanitary but dangerous in the fire zone, where buildings of value and importance are adjacent to shacks that appear to the officials to be a menace to the community. In the eastern section of the city in one day they condemned a total of sixteen buildings of various sizes and sorts, and the leasers were given notice to vacate within thirty days. Fire marshal Eklund said that he and the city officials had paid particular attention to alleys in the rear of buildings and to basements and yards in the district visited, as well as to buildings themselves. It is intended to make a clean sweep of everything that is a menace to the community as a fire hazard, as well as to the health of the city. City health officer Matthews stated that he would increase the size of his staff if necessary to clean up the city from the standpoint of sanitation. Build-

ings considered unsafe or insanitary will be ordered demolished within a month.

Municipal Markets of Los Angeles.

Los Angeles, Cal.—At the request of a Berkeley committee, appointed to investigate municipal markets, James B. Britt, superintendent of the municipal market department of Los Angeles, has sent a letter describing the successful operation of his department. He says, in part: "The municipal markets were started in this city through an ordinance governing the sale of food products, and have now been in operation since May, 1913. The city occupies by lease five separate locations in residential districts, convenient to street car traffic. On these lots has been erected covered-over market sheds, open on all sides to permit of ventilation and free and easy access of producers and patrons. Suitable booths or stalls have been erected so that the farmers and others having goods for sale are enabled to back up their vehicles and make suitable display of their wares. A market attendant is employed at each market to look after the care and cleanliness of the markets. The markets are open Tuesdays, Thursdays and Saturdays of each week at present, but the continued success of the markets prompts me to obtain authority to keep them open each day in the week. In order to make the markets self-sustaining if possible, a fee of 25 cents per day per stall is charged. Each of these markets will accommodate about sixty producers. At present three of the markets are running to nearly capacity and the others are doing very well. Nearly all varieties of food products are offered for sale at the markets, including all kinds of vegetables, chickens, live and dressed, eggs, butter, honey and meats, the latter consisting mostly of pork brought in directly from the farm. It has been an easy matter to get the producers to come. The prices prevailing at the municipal markets are from 25 per cent to 30 per cent lower than at the stores and from the peddlers on the streets. A constant check is kept on prices by this department and information along this line is constantly furnished the public through the medium of the press and in other ways. A short time ago Mayor Woodman inaugurated the municipal fish problem, which has had such great success as to be almost out of our reach. This question was handled simply by gathering together data on the productive and distributive cost of fish, embracing all the ramifications from the deep sea to the table of the consumer. Arrangements were made through private individuals (the city not being able) to purchase the fish direct from the fisherman, ship direct to our municipal markets and sell to the consumer. The retail price on fish since the operation of this plan has been cut in two; in other cases, greater savings. The opening day of the markets four tons of fish were disposed of. Each day since then a very good average has been maintained."

Right of City to Sell Fuel.

Hartford, Conn.—Attorney-General Hinman has given the state senate legislative committee of cities and boroughs an opinion, requested by the committee, concerning the constitutionality of an act pending before the committee authorizing the city of Waterbury to engage in the business of selling wood, coal and ice in that city, and of several substitute bills covering the same general subject. The original bill and several substitutes gave unlimited power to the city to sell coal, wood and ice for the use of its inhabitants, but a substitute bill, the passage of which is now desired by the city, and therefore specially considered in the opinion, creates a board of fuel commissioners authorized to purchase coal and wood, store the same on lands owned by the city, and sell "to the inhabitants of the city whenever they are unable to supply themselves through purchases from private enterprises or when any such sales may be necessary for the relief, health or comfort of the inhabitants, or in the event of a public exigency. The attorney-general holds that the legislature can authorize a city or town to tax its inhabitants only for public purposes, and that a municipality cannot be authorized to sell fuel to its citizens as a business, but may establish fuel yards for the purpose of selling or furnishing fuel in an ex-

LEGAL NEWS

A Summary and Notes of Recent Decisions— Rulings of Interest to Municipalities

Competitive Bidding—Necessity.

(Ind. App.) Competitive bidding in the letting of paving contracts is mandatory and jurisdictional, and, if omitted, the proceedings are void.—*Hoosier Const. Co. v. Seibert*, 114 N. E. 981.

Power of Municipal Corporation.

(Ala.) Since all persons dealing with a municipal corporation are held to knowledge of its powers and of powers of its officers, an assignee of a contract ultra vires the corporation can take nothing thereunder.—*Pearson v. Duncan & Son*, 73 So. 406.

Record of Council—Evidence.

(Ky.) Under Ky. St. §§ 3636, 3638, since the record of the council is evidence of no facts except those required to be shown by such sections, vitiating facts showing the invalidity of an ordinance can be shown by evidence aliunde the record.—*Bates v. City of Monticello*, 190 S. W. 1074.

Use of City Lands—Forfeiture.

(Tex. Civ. App.) Under ordinance authorizing sale of city's lands, where city secretary, for default in payment of interest, did not indorse "Land forfeited" on purchaser's notes, and did not make entry to that effect on "account of sales" kept by him, there was no forfeiture.—*City of Laredo v. Salinas*, 191 S. W. 190.

Power of City—Charter.

(Cal.) The rule that a city has no powers not expressly given or necessarily implied from its charter does not do away with the rules of interpretation, and all of the charter is to be considered in arriving at the meaning of any part of it.—*Hayne v. City and County of San Francisco*, 162 P. 625; *Telegraph Hill Neighborhood Ass'n v. Same*, Id. 630; *Cooper v. Same*, Id. 631; *Simpson v. Same*, Id.

Cost of Widening Streets—Taxing.

(N. Y. Supp.) The costs incurred in proceedings for widening streets, subsequently amended by excluding some streets, lessening the width of others, and reducing the taxable area, cannot be taxed against the property owners in the amended proceedings.—*In re Rosedale Ave. in City of New York*, 162 N. Y. S. 877.

Description of Work—Sufficiency.

(Ill.) An ordinance for street improvement is not open to objection that it improperly delegates power to board of local improvements because it does not set forth in minute detail every particular of improvement and every circumstance of work, a substantial compliance with statute being all that is necessary, and discretion as to details of work being properly left to board of local improvements.—*City of East St. Louis v. Vogel*, 114 N. E. 941.

traordinary emergency. He therefore advises that should the general assembly determine that existing conditions and the interests of the public require the conferring of any municipal powers relating to the sale and distribution of fuel, the right might constitutionally be granted to purchase and store fuel and sell the same to the inhabitants whenever they are unable to supply themselves through purchases from private enterprises, or in the event of a public emergency—that is, when a famine in fuel exists and the city can obtain a supply otherwise unobtainable, or a scarcity, falling short of a famine, but so great as to create general and widespread distress in the community which cannot be alleviated by private enterprise. As to the further power proposed by the substitute bill to sell whenever such sales may be necessary for the relief, health or comfort of the inhabitants, it is advised that by the weight of authority the constitutionality of this provision is at least open to serious doubt.

NEWS OF THE SOCIETIES

Calendar of Meetings.

May 28, 29.—CIVIC IMPROVEMENT LEAGUE OF CANADA. Annual conference, Winnipeg, Man. Acting Secretary, Thomas Adams, Commission of conservation, Ottawa, Ont.

May 29.—ONTARIO HEALTH OFFICERS' ASSOCIATION. Annual meeting, Toronto, Ont. Secretary, J. W. S. McCullough, chief officer of health of Ontario, Toronto.

June 1-4.—AMERICAN ASSOCIATION OF MEDICAL MILK COMMISSIONERS. Annual meeting, Brooklyn, N. Y. Secretary, Dr. Otto F. Geier, Ortiz Building, Cincinnati, O.

June 4-5.—AMERICAN ACADEMY OF MEDICINE. Annual meeting, New York City. Secretary, Dr. Thomas W. Grayson, 1101 Westinghouse Building, Pittsburgh, Pa.

June 4-8.—AMERICAN MEDICAL ASSOCIATION. Annual meeting, New York City. Secretary, Frederick R. Green, 535 North Dearborn Street, Chicago, Ill.

June 6-13.—INTERNATIONAL ASSOCIATION OF POLICEWOMEN. Annual meeting, Pittsburgh, Pa. Secretary, Mrs. G. Sharrot, 40 Court House, Minneapolis, Minn.

June 6-13.—NATIONAL CONFERENCE OF CHARITIES AND CORRECTIONS, Pittsburgh, Pa. Secretary, Wm. T. Cross, 315 Plymouth Court, Chicago, Ill.

June 11.—NEW YORK STATE CONFERENCE OF MAYORS AND OTHER CITY OFFICIALS. Annual conference, Buffalo, N. Y. Secretary, W. P. Capes, 26 Washington Ave., Albany, N. Y.

June 11-14.—SOUTHWESTERN WATERWORKS ASSOCIATION. Annual convention, Topeka, Kan. Secretary, E. L. Fulkerson, Waco, Tex.

June 13-15.—NATIONAL ASSEMBLY OF CIVIL SERVICE COMMISSIONS. Annual meeting, Boston, Mass. Secretary, John T. Doyle, 1724 F St., N. W., Washington, D. C.

June 13-15.—MARYLAND STATE FIREMEN'S ASSOCIATION. Twenty-fifth annual convention, Cumberland, Md. Secretary, William Weagly, Westminster, Md.

June 20-22.—AMERICAN INSTITUTE OF CHEMICAL ENGINEERS. Semi-annual meeting, Buffalo, N. Y. Secretary, J. C. Olsen, Cooper Union, New York, N. Y.

June 25-27.—LEAGUE OF LOUISIANA MUNICIPALITIES. Annual convention, New Iberia, La. Secretary, Mayor Joseph B. Elam, Mansfield, La.

June 28-30.—AMERICAN SOCIETY FOR TESTING MATERIALS. Annual meeting, Atlantic City, N. J.

July 12, 13.—LEAGUE OF MICHIGAN MUNICIPALITIES. Annual convention, Grand Rapids, Mich. Secretary, Charles A. Sink, Ann Arbor, Mich.

July 30-Aug. 3.—SOUTHERN SOCIOLOGICAL CONGRESS. Annual meeting, Blue Ridge, N. C. Secretary, J. E. McCulloch, 508 McLachlen Bldg., Washington, D. C.

Sept. 11-14.—NEW ENGLAND WATERWORKS ASSOCIATION. Annual convention, Hartford, Conn. Secretary, Willard Kent, 715 Tremont Temple, Boston, Mass.

Oct. 16-19.—INTERNATIONAL ASSOCIATION OF FIRE ENGINEERS. Annual convention, Jacksonville, Fla. Secretary, Chief James McFall, Roanoke, Va.

Oct. 17-18.—LEAGUE OF MINNESOTA MUNICIPALITIES. Fifth annual convention, St. Cloud, Minn. Secretary-treasurer, Richard R. Price, University of Minnesota, Minneapolis.

Nov. 12-16.—AMERICAN SOCIETY OF MUNICIPAL IMPROVEMENTS. Annual convention, New Orleans, La. Secretary, Charles C. Brown, 469 Transportation Building, Chicago, Ill.

Nov. 20-23.—PLAYGROUND AND RECREATION ASSOCIATION OF AMERICA. Recreation Congress, Milwaukee, Wis. Secretary, H. S. Braucher, 1 Madison Ave., New York, N. Y.

Conference of Health Authorities.

The fifteenth annual conference of the State and Territorial health authorities with the Public Health Service of the United States was held April 30 and May 1, 1917, at Washington, D. C. This conference is held annually pursuant to an act of Congress approved July 1, 1902. The following were among the matters brought before the conference for its consideration:

The need and advisability of correlating the Federal, State, and local health authorities and agencies to effect a maximum of co-operative efficiency in times of national emergency.

Reciprocal notification by State and Territorial authorities of disease carriers traveling or about to travel from one State or Territory to another.

Minimum standard morbidity tables for use in annual reports of State and Territorial health authorities showing the prevalence and geographic distribution of cases of the notifiable diseases.

What constitutes an epidemic or unusual prevalence of a disease?

The typhus fever situation as it affects the United States and the best means of handling it.

Are health authorities using all available information and known means to reduce the morbidity from pneumonia, syphilis, and tuberculosis?

The sanitation of public conveyances. Interstate quarantine regulations and intrastate quarantine regulations.

Health insurance versus sickness insurance.

Standard methods of public health accounting.

The status of full-time local health officers in the United States.

Rural public health administration and sanitation.

The development of an area of known disease prevalence through the establishment of a morbidity registration area of the notifiable diseases.

The need for better, more uniform, and comparable morbidity statistics of general hospitals, special hospitals, and sanatoria, and the advisability of the establishment of a registration area for morbidity and medical statistics of these institutions—and similar statistics and a registration area for penal institutions.

The need for uniform and comparable morbidity statistics of those engaged in certain industries, and the advisability of the establishment of a registration area for such statistics.

The collection and publication of public health and sanitary information as it relates to the several States and Territories, such as public health laws and regulations, directories of State and

Territorial health authorities, appropriations made for public health purposes, and public health methods and practices.

The following are among the resolutions formally adopted by the conference:

On Participation of States in Conference.—Resolved, That the Secretary of the Treasury be requested, through the Surgeon General of the United States Public Health Service, to call to the attention of the governors and the health authorities of the several States and Territories the important public health aspects of the annual conference of the State and Territorial health authorities with the United States Public Health Service and to urge that due provision be made for the regular attendance of the proper health officials and for their attendance also on such committee meetings as may be necessary for the work of such conferences.

On Standard Morbidity Tables.—Resolved, That the conference adopt as minimum standard morbidity tables for publication in annual reports of State and Territorial health authorities tables giving the distribution of cases of the notifiable diseases, as follows: (1) Chronologically by months, (2) by sex, (3) by 5-year age groups up to 25 years and by 10-year age groups after 25 years, (4) by termination (recovery or death) (5) geographically by counties and municipalities.

Reciprocal Notification of Disease Carriers.—Whereas immediate knowledge of (1) cases of communicable diseases (plague, cholera, typhoid fever, pulmonary tuberculosis, yellow fever, smallpox, leprosy, typhus fever, scarlet fever, diphtheria, measles, whooping cough, poliomyelitis (infantile paralysis), Rocky Mountain spotted or tick fever, epidemic cerebrospinal meningitis, and dysentery, and such other diseases as the Surgeon General of the United States Public Health Service may designate from time to time, recognized in one State, but obviously infected outside that State, and (2) persons leaving one State for another while in an infectious condition, and of (3) persons leaving a State after exposure to a source or medium of infection of an acute infectious disease, would be of great value to the health authorities of the States and Territories which may be concerned and to the United States Public Health Service; be it

Resolved, That during the present war immediate reciprocal notification in regard to such cases and carriers and exposed persons be made by State and Territorial health authorities on forms to be provided by the United States Public Health Service.

On Health Insurance versus Sickness Insurance.—Resolved, that in the judgment of this conference the use of the phrase "health insurance" to describe a system of sickness relief that makes no specific, positive, and definite provision for the conservation of health is liable to endanger the efficiency of existing

health agencies and retard their further development.

Resolved, That in any scheme for health insurance all activities looking toward the active conservation and promotion of health should be entrusted to the regularly established health conservation agencies, which should be reorganized or reinforced for that purpose if necessary.

Conference on City Planning.

At the ninth annual conference on city planning, held in Kansas City, May 7, 8 and 9, many interesting papers were presented. Among them were:

Districting and Zoning of Cities: Lawson Purdy, president Department

of Taxes and Assessments, New York City.

Districting Procedure and Results: Howard Robertson, city attorney of Los Angeles, California; Charles H. Cheney, secretary California Conference on City Planning.

The Legal Status of Districting: Edward M. Bassett, special counsel for the New York Commission on Districting, New York City.

A State Campaign for City Planning: Lee J. Ninde, Fort Wayne, Indiana, past president Real Estate Association of Indiana.

How to Start in a Small City: George L. Goemann, member Plan Commission of Mansfield, Ohio.

The Development of the Plan: Thomas Adams, town planning advisor, Commission of Conservation of Canada, Ottawa.

The Relation of City Planning to Business: J. Horace McFarland, president American Civic Association.

Interurban Passenger Terminals: George A. Damon, Dean of Throop College of Technology, Pasadena, California.

The Industrial Terminal and Its Relation to the City Plan: A. Pearson Hoover, consulting engineer, New York City.

Motor Car Parking Regulations in Small Cities: A general discussion.

Traffic Ways: Curtis Hill, city engineer of Kansas City.

Relation of Traffic Ways to Parks and Boulevards: W. H. Dunn, superintendent of parks, Kansas City.

Street Widening to Meet Traffic Demands: Nelson P. Lewis, chief engineer Board of Estimate and Apportionment, New York City.

President's Address: City Planning Needs of Kansas City With Special Reference to the Treatment of Water Courses: Frederick Law Olmsted, Fellow American Society of Landscape Architects, Brookline, Mass.

The Waterways of the Bronx, New York (illustrated by slides), Jay Downer, engineer Bronx Parkway Commission, New York City.

Acquirement of Kansas City Park and Boulevard System and Its Effect on Real Estate Values: William Buchholz, park commissioner, Kansas City.

Oklahoma Firemen's Association.

The annual convention of this association will be held at Chickasha, May 29, 30 and 31. In addition to valuable papers which will be presented there will be reel races, a ladder climbing contest and a chiefs' race.

The following topics will be discussed by the members:

(Continued on page 731.)

PROBLEMS CITIES ARE STUDYING WITH EXPERTS

Verdel, Neb., is to build a WATER SUPPLY SYSTEM following the preparation of plans by the engineers, Gramlich & Wagner, Technical building, Lincoln, Neb.

A SEWERAGE SYSTEM is to be constructed by Fanwood, N. J. Plans have been completed by Fuller & McClintock, 170 Broadway, New York, N. Y.

Remer, Minn., is to construct a WATER SYSTEM. Plans are to be prepared by W. C. Buck, 4821 Fremont avenue, S., Minneapolis, Minn.

A FILTER PLANT to cost about \$100,000 is to be constructed by Wausau, Wis. Plans are being prepared by W. G. Kirchoffer, Madison, Wis.

A SEWERAGE SYSTEM to cost about \$80,000 has been planned for Aurora, Ont., by James, Loudon & Hertzberg, 36 Toronto street, Toronto, Ont.

The towns of Norwell and Marshfield and Plymouth County, Mass., are rebuilding a BRIDGE. Plans for the work were prepared by J. Wm. Beal, 58-62 Summer street, Boston, Mass.

Witte, Ill., is making some STREET IMPROVEMENTS for which the Warren Engineering Company, Povers Building, Decatur, Ill., prepared the plans and specifications.

A SEWAGE DISPOSAL PLANT is to be built by Atlas, Okla., from plans and specifications prepared by the Benham Engineering Co., Colcord building, Oklahoma City, Okla.

Santa Barbara, Cal., contemplates the completion of its WATERWORKS after the passage of a \$590,000 bond issue. J. B. Lippincott and E. R. Bowen, Central building, Los Angeles, Cal., have been retained as engineers.

Cheltenham, Pa., has voted a large bond issue for a SEWER SYSTEM and DISPOSAL PLANT. Plans and specifications for the work are being prepared by Albright & Mebus, Land Title building, Philadelphia, Pa.

STREET IMPROVEMENTS made by Monessen, Pa., were planned by Chaney & Armstrong, Washington, Pa.

Kershaw County, Camden, S. C., is to construct a highway BRIDGE after the plans prepared by Frink & Pinner, Royster building, Norfolk, Va.

Tonganoxie, Kan., is making improvements to its WATERWORKS, following plans prepared by Black & Veatch, 507 Interstate Building, Kansas City, Mo.

In making PAVING IMPROVEMENTS, the village of Nashville, Mich., had plans and specifications prepared by the W. J. Sherman Co., 615 Nasby building, Toledo, O.

Tallahatchie County, Charleston, Miss., is to build about 21 miles of HIGHWAY. The engineer for the project is A. N. Bullitt, 92 North Tucker street, Memphis, Tenn.

SEWER improvements to cost \$150,000 are to be made by Waco, Tex. Burns & McDonnell, 400 Interstate building, Kansas City, Mo., are the engineers for the work.

A SEWERAGE SYSTEM is to be constructed by West Chicago, Ill. Plans and specifications were prepared by Marr, Green & Co., 17 North LaSalle street, Chicago, Ill.

Leland, Miss., is to build a SEWER SYSTEM and DISPOSAL PLANT. The engineer for the work is Frank L. Wilcox, Syndicate Trust building, St. Louis, Mo.

Graham, Tex., is to construct a SEWER SYSTEM and DISPOSAL PLANT to cost \$25,000. The city has retained Henry Exall Elrod as engineer to design and supervise construction.

The Black Bayou Drainage District, Greenville, Miss., is to do DRAINAGE work on about 100,000 acres. Surveys have been completed by the Morgan Engineering Co., Goodwin Institute building, Memphis, Tenn.

PERSONALS

Connell, William H., chief of the Bureau of Highways of the Department of Public Works of Philadelphia, has resigned and will enter a firm of contracting engineers, Day & Zimmerman.

Kuhn, Frank W., has been appointed fire chief of Pontiac, Mich.

Booth, James J., formerly a member of the firm of Booth and Flinn, contractors, died in Pittsburgh, Pa., May 9.

Young, John E., has been appointed second assistant fire chief and fire marshal of Portland, Ore. W. R. Kerrigan was made battalion chief.

The Newkirk Engineering Company, consulting and construction engineers, consisting of F. E. Newkirk and his son, Chas. R. Newkirk, has opened offices at 552 Main street, Dubuque, Ia. The firm will specialize in waterworks, electric lighting and power plants, heating and refrigeration.

NEW APPLIANCES

Describing New Machinery, Apparatus, Materials and Methods and Recent Interesting Installations.

RANSOME BANTAM PAVER.

One-Bag Batch Mixer With Efficiency Features.

A new paver with a number of important operating features that should prove of decided value on street and road construction work has just been added to the Ransome line, which now also includes the big Good Roads Paver. The new machine is the Ransome Bantam Paver and it is claimed to be at ease on large as well as small paving jobs. It is especially adapted to work on alleys, long driveways and small road jobs.

It is a one-bag batch mixer and is equipped with an open end pivot hopper, with a dumping bar for quick charge. The hoist sheaves, which are compensating, raise this hopper, and are so built as to apply the maximum speed as the hopper approaches the vertical position. The hoist is provided with automatic knockout, which prevents damage to the hopper and permits the operator to turn his attention to other duties. The automatic water-measuring tank, similar to those on Standard Ransome mixers, facilitates quick and efficient operation.

The distributing chute is ten feet long and its swing is practically half a circle. The mixer end is 3 ft. 11 ins. above the ground, permitting a steep slope when desired. There is an intermediate gate in the chute which allows even spreading of the concrete.

The mixer is provided with a 6 h. p. engine and self-traction. The traction gear drives through a suitable friction clutch; the reverse gear, through a countershaft, driving each rear wheel by means of chains and sprockets. A brake band controls the speed on grades.

The accompanying illustration shows the new mixer. It is made by the Ransome Concrete Machinery Company, 115 Broadway, N. Y., and Dunellen, N. J.

WAGON AND TRUCK LOADERS.

Jeffrey Equipment for Handling Construction Materials.

The Jeffrey self-propelling wagon loader is built particularly for labor economy and should prove especially attractive to contractors, public works officials and material men in these days of labor shortage. It is estimated that the work of two to five shovelers may be easily replaced by the loader. One of the most important work-saving features of the machine is that it is self-propelling—a loader which is not, requires three men to move it about or push it into the pile or else two or three shovelers are required on the pile to feed the materials to the buckets. Only one man is required to operate the loader as it is fed into the pile and moved about under its own power at

the will of the operator. In addition to the saving of labor, the self-propelling feature makes it possible to build a heavy and substantial machine to resist the wear and tear of abrasive materials and withstand severe strains when handling crushed stone, sand, gravel, etc. The capacity of 1 to 1½ yards of material per minute enables the loader to fill wagons or trucks in 3 to 4 minutes—instead of taking 20 minutes for three men to fill a 3-yard wagon. The loader is made in two types—"A-16" being the rigid type and "A-15," the collapsible.

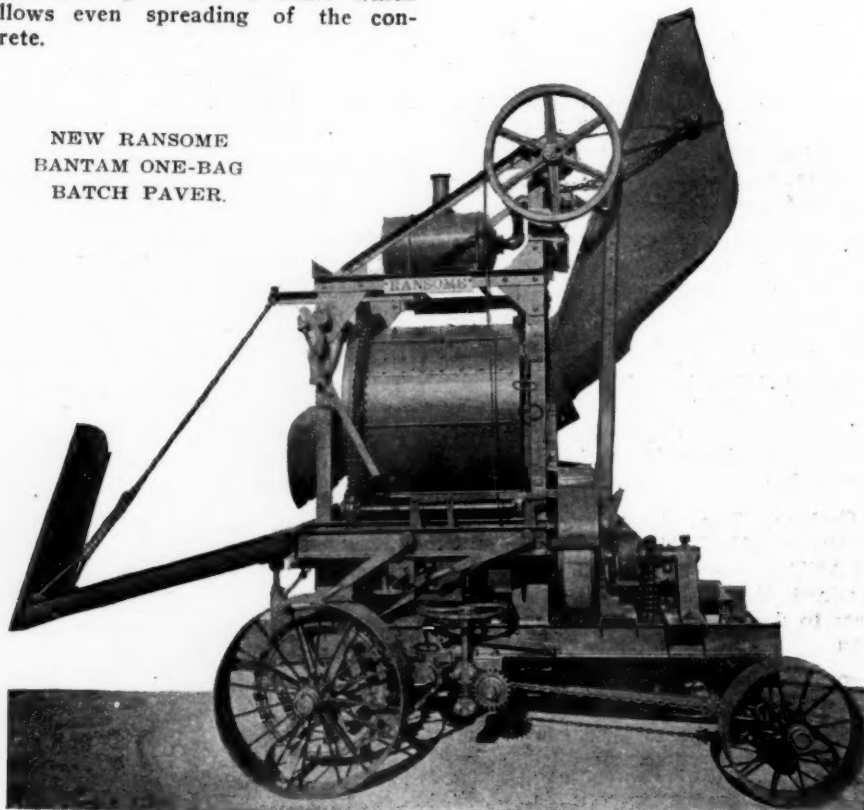
The "A-16" machine is built with a rigid non-collapsible frame and its point of discharge is 8 ft. 5 ins. from the ground. While in operation, the discharge end remains stationary—the digging end can be raised or lowered by hand winch to suit conditions. The shipping weight is 5,300 pounds, with motor, and 6,200 pounds with gasoline engine.

The type "A-15" loader is built with a collapsible elevator to make it available about all parts of the yard. This feature also makes it easier to operate the loader over rough ground and permits it to be used where low sheds, trestles and other overhead obstructions are encountered. The elevator can be quickly raised and lowered. The discharge is 9 feet from the ground. The shipping weight is 5,800 pounds, with the motor, and 6,700 pounds with the gasoline engine.

On both types 14x8-inch malleable iron buckets are used. The wearing part of the bucket, which is the front lip or edge, is fitted with renewable digger edge steel teeth. The buckets are bolted to 102-B standard square shank pin "Hercules" chain with steel angle attachment on one side of every fourth link. Lock washers are used. The chain consists of high carbon steel side bars and riveted pin of 5/8 inch diameter and malleable block links. The elevator has chilled rim, brass-bushed foot wheels. No. 73 standard Reliance riveted chain is used to drive the elevator. All the operating levers and the steering wheel are on one side of the machine. The discharge end is fitted with adjustable angle swivel spout or straight chute. The drive is a motor or 6 h.p. gasoline engine. The wheels are 36x8 inches with cleats and 18x7 inches.

The accompanying illustrations show the "A-15" type loader, with elevator raised and lowered, and also the "A-16" in action loading a truck in the yards of the Engineering Supply and Erection Co., Jersey City, N. J. (page 732). The loaders described are made by the Jeffrey Manufacturing Company, Columbus, O.

NEW RANSOME
BANTAM ONE-BAG
BATCH PAVER.



INDUSTRIAL NEWS

Cast Iron Pipe.—Prices remain the same as last week. Quotations: Chicago—4-inch, class B and heavier, \$58.50; 6-inch, \$55.50. New York—4-inch, class B and heavier, \$58.50; 6-inch, \$55.50. Birmingham—4-inch, class B and heavier, \$53; 6-inch, \$50; class A, \$1 extra.

"Emergency Signaling"—This is the title of a splendidly prepared and printed book just published by the Gamewell Fire Alarm Telegraph Company, 70 East 45th street, New York, N. Y. The book is a history of the art of fire alarm and emergency signaling and covers a period of about 65 years. From the early experiments of Dr. W. F. Channing and Moses G. Farmer, of Boston, in 1845 to 1851, and the work of Charles Robinson, of New York, through the dramatic story of hardship, energetic striving and patient labor, up to the present development of the latest type of signaling marvel the interest is carried in story and picture. The inventions of Charles T. Chester, Crane and Rogers, James M. Gardiner, J. J. Ruddick, Tooker, W. H. Suren, Rogers and George F. Milliken, which all helped in the evolution of the apparatus to its present intricacy and efficiency, are described and explained. But the name which stands out in all the story is that of the man who was pre-eminently responsible for this growth of this great art and public service—John N. Gamewell, of South Carolina.

The chapter headings of the book are: "The Birth of the Art"—"The Fire Alarm Signal Box"—"Inventions for More Quickly Sending Alarms"—"Public Alarm Apparatus"—"The Automatic Repeater"—"The Central Office"—"The Police Telegraph and Telephone Service" and "Emergency Signaling in Private Properties." The illustrations show the different stages of development of the apparatus and scenes in the factory of the manufacturers. The frontispieces are portraits of John N. Gamewell and James M. Gardiner.

The volume should certainly be a valuable and striking addition to the library of fire officials and other city officials interested in the apparatus on which their efficiency so much depends.

The American-LaFrance Fire Engine Company, Inc., Elmira, N. Y., announces the receipt of the following orders: Ann Arbor, Mich. 1-type 75 pumping engine and hose car; Beverly, Mass. 1 type 75 pumping engine and hose car; Billerica, Mass. 1 type 40 comb. with junior pump; Brookline, Mass., 2 type 75 pumping engines and hose cars; Chicago, Ill., 2 type 75 pumping engines and hose cars; Columbia, Pa., 1 type 75 pumping engine and hose car; Concord, Mass., 1 type 12 comb. service truck; Florida, N. Y., 1 type 40 comb. with junior pump; Great Falls, Mont., 1 type 40 pumping engine and hose car; Great Falls, Mont., 1 type 12 comb. service truck; Holland, Mich.,

1 type 12 comb. with junior pump; Houlton, Me., 1 type 40 comb. with junior pump; Hull, Mass., 1 type 75 pumping engine and hose car; Huntingdon, Pa., 1 type 75 pumping engine and hose car; Iowa City, Iowa, 1 type 75 pumping engine and hose car; Irwin, Pa., 1 type 75 comb. with junior pump; Janesville, Wis., 1 type 40 comb. with junior pump; Kane, Pa., 1 type 40 comb. with junior pump; Lexington, Mass., 1 type 14 6-C. Service truck; Litchfield, Conn., 1 type 40 comb. with junior pump; Newburgh, N. Y., 1 type 40 comb. chem. engine and hose car; North Kingston, R. I., 1 type 75 pumping engine; Oneida, N. Y., 1 type 75 pumping engine; Ontario, Cal., 1 type 12 pumping engine; Pawtucket, R. I., 1 type 40 comb. with junior pump; Reno, Nev., 1 type 12 pumping engine; Reno, Nev., 1 type 17 85-ft. aerial truck; Reno, Nev., 1 type 12 comb. chem. engine and hose car; Rockland, Me., 1 type 75 pumping engine; St. Catharines, Ont., 1 type 12 comb. chem. engine and hose car; Salinas, Cal., 1 type 75 pumping engine; San Gabriel, Cal., 1 type 12 comb. with junior pump; Scarsdale, N. Y., 1 type 10 pumping engine and hose car; Scarsdale, N. Y., 1 type 14 comb. service truck; Seattle, Wash., 1 type 12 pumping engine; Steelton, Pa., 2 type 75 comb. with junior pump; Steelton, Pa., 1 type 14 6-C. service truck; Syracuse, N. Y., 1 type 75 piston pumping engine; Syracuse, N. Y., 1 type 12 comb. chem. engine and hose car; Utica, N. Y., 3 type 75 pumping engines; Utica, N. Y., 2 type 14 service trucks; Utica, N. Y., 1

type 40 chemical engine; Utica, N. Y., 3 type 40 comb. chem. engines and hose cars; West Hoboken, N. J., 1 type 75 pumping engine; West Hoboken, N. J., 1 type 31 6-C. 75-ft. aerial truck; West Point, Ga., 1 type 12 pumping engine; Willmer, Minn., 1 type 12 comb. with junior pump; Worcester, Mass., 1 type 75 pumping engine.

The Walter A. Zelnicker Supply Co., St. Louis, Mo., announces that at a meeting of its board of directors held April 19, Mr. A. R. Topping was elected secretary of the company. Mr. Topping has been associated with the Zelnicker company for the past eleven years and his advancement has been rapid.

NEWS OF THE SOCIETIES

(Continued from page 729.)

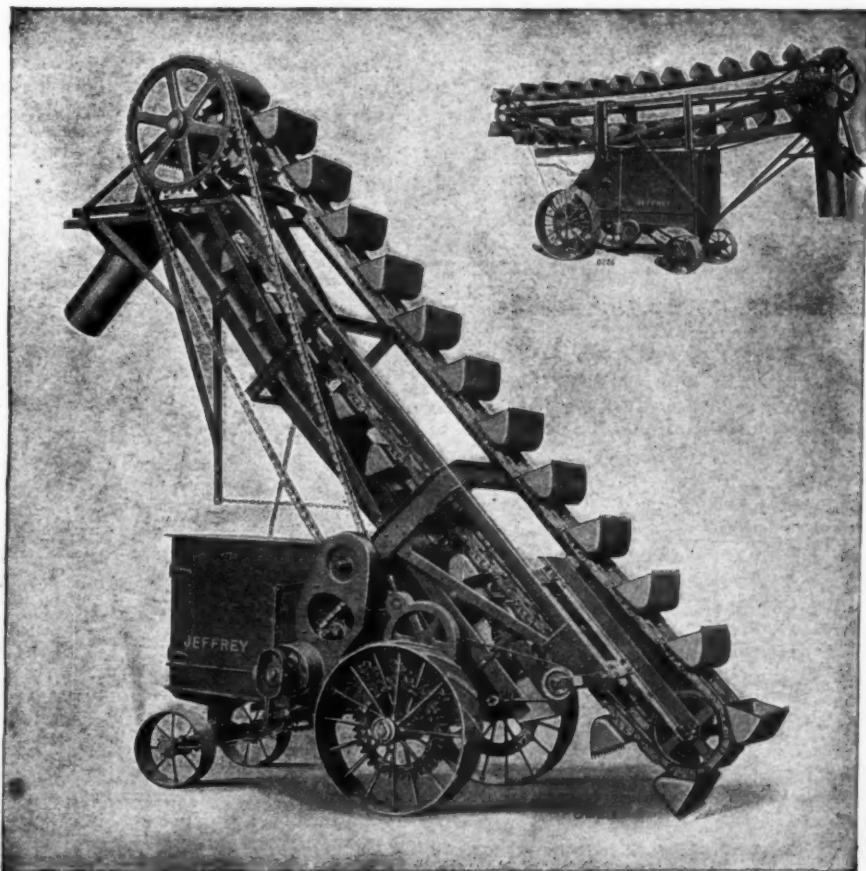
Kansas City Park System and Its Effect on the City Plan: George E. Kessler, St. Louis.

Fire Insurance and Its Relation to Incendiarism, by Chief Chas. McCain, El Reno.

Motor Fire Apparatus; Its Durability, Efficiency and Economy of Operation, by Chief R. C. Adler, Tulsa; Chief A. W. Smalley, Sapulpa.

Fire Prevention and Uniform Fire Marshal Laws, by Hon. C. C. Hammonds, State Fire Marshal, Oklahoma City.

Inspection of Buildings and Contents by Uniformed Members of the Fire Department, by Chief Ross M. Brooks, Oklahoma City.



JEFFREY TYPE A-15 LOADER, SHOWING ELEVATOR RAISED AND LOWERED

Exhibits; Their Benefits to the Oklahoma State Firemen's Association, by J. Bart Foster, Chandler.

Fire Prevention; by Education Rather Than Legislation, by Chief S. J. Turk, Claremore.

Delegates; Their Duties at the Convention and to Those Whom They Represent, by Chief C. A. Clark, Weatherford.

Gasoline; the Safe and Sane Handling and Storage Thereof, by Chief W. A. Peters, Sallisaw.

Standard of Drills and Discipline for Fire Departments, by Chief Chas. Chapman, Muskogee.

New Jersey Fire Chiefs' Association.

At the annual session held at Newark, May 3, Capt. C. Albert Gasser, head of the Bureau of Combustibles and Fire Risks, stressed the need of advanced methods of fireproof construction of buildings. "In view of the growth of small municipalities into large cities," said Captain Gasser, "the latter have developed conditions that are critical. After ten years of hard work in Newark, rowing against the tide, we find ourselves still learning about fire prevention and still educating the people in their responsibility to their neighbors, as well as the protection of their own property.

"If the chiefs at this meeting live in communities smaller than Newark that have not yet begun the actual supervision of the construction of garages, theaters and moving picture houses, paint shops, factories, ammunition plants and other structures involving a special hazard, it is time they began such supervision. If they do not they will grow up until they find themselves facing the same risks as have the big cities where calamitous fires have occurred."

Captain Gasser told of various kinds of fireproof construction of buildings. As an aid to the fire chiefs he offered free use of the records of the city's department. At the close of his address Captain Gasser was elected an honorary member of the association.

Conference of Mayors and Other City Officials.

Consideration of state problems which affect cities will occupy considerable of the time of the city officials of New York State during their eighth annual conference, which will be held in Buffalo on June 12, 13 and 14. The advisory committee of the state conference of mayors and other city officials announced the program for the annual gathering and at the same time predicted that the convention this year will be the largest in the history of the organization.

Governor Charles S. Whitman, Senator Elon R. Brown and Senator Henry M. Sage have accepted invitations to speak at the conference, the governor's acceptance being conditional on his being able to leave Albany at that time. Senator Brown will discuss his proposed home rule constitutional amendment, which has been approved by the legislature. The problem of defining

what should be state sources of revenue and what should be municipal sources of revenue by indirect taxation will be discussed by Senator Sage.

Two engineering problems which are confronting many cities will be discussed by W. Thomas Wooley, city engineer of Schenectady, and W. Earl Weller, city engineer of Binghamton. Mr. Wooley will speak about assessment districts of street lighting and Mr. Weller will discuss paving contracts.

Among the other speakers at the conference will be Commissioner of Finance Charles H. Hill, of Buffalo; George W. Wickersham, of New York City; Clement J. Driscoll, an expert on police administration; Homer Folks, of New York City; G. V. Branch, of the U. S. Department of Agriculture; former City Chamberlain Henry Bruere, of New York City, and Dr. Henry L. K. Shaw, of the state department of health. These speakers will discuss Buffalo's assessment methods, police administrative work, the feeble-minded problem in cities, municipal public markets, municipal pension systems and the pasteurization of milk.

City Marshals and Chiefs of Police of Texas.

At the annual meeting held at Waco, May 9 and 10, the association selected Galveston for the 1918 meeting place, and elected the following officers: President, John W. Ryan, Dallas; first vice-president, R. S. Davison, Houston; second vice-president, Ed. Moeller, New Braunfels; third vice-president, F. M. Stallworth, Marlin; secretary-treasurer, G. A. Smith, Dallas; sergeant at arms, Guy McNamara, Waco; mascot, Miss Mollie Rufus Porter, Fort Worth.

United States Civil-Service Examination. Aid (Male). Coast and Geodetic Survey. June 6-7, 1917.

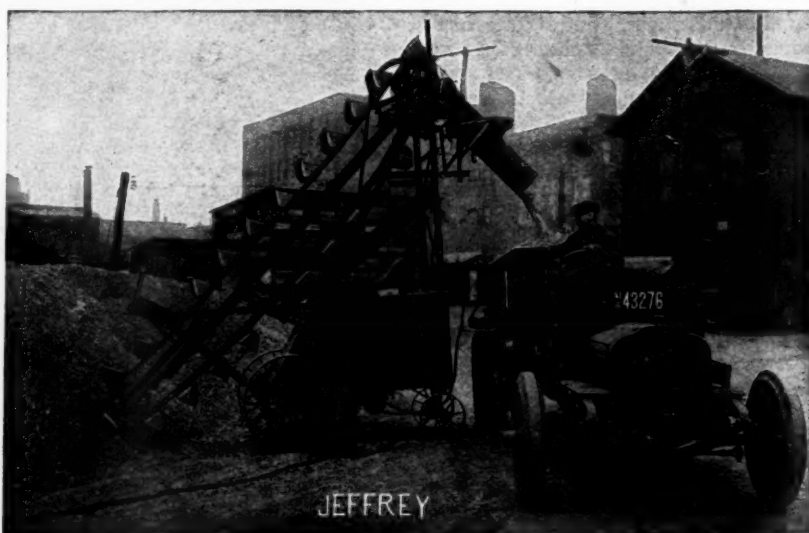
The United States Civil Service Commission announces an open competitive examination for aid in the Coast and Geodetic Survey, for men only, on June 6 and 7, 1917. Vacancies occurring in the positions of aid and deck officer in the Coast and Geodetic Survey and extra observer and draftsman on board

ship will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion. Qualified persons have an excellent opportunity of appointment from this examination, and as insufficient eligibles were obtained from the examinations recently held for these positions such persons are urged to enter this examination. Competitors will be examined in the following subjects, which will have the relative weights indicated:

Subjects.	Weights.
1. Mathematics (including geometry, plane and solid; algebra, trigonometry, analytics, and the elements of calculus).....	15
2. Practical computations (involving the use of logarithmic tables).....	15
3. Surveying (elementary questions in plane and geodetic surveying, and use of field instruments).....	20
4. Astronomy (elementary questions in spherical and general astronomy, with special reference to determination of latitude, longitude, and azimuth, and use of field instruments).....	10
5. Physics (elementary questions in optics, magnetism, etc.).....	10
6. Topographic drawing and lettering.....	20
7. Training and experience....	20
Total	100

Aids are appointed at a salary of \$1,000 a year and are engaged upon almost continuous field work. While in the field an allowance is paid them of \$1 a day while living on shipboard or in camp, in quarters furnished by the Government, or of \$2 a day while living ashore at boarding houses and hotels. If the aid is in charge of a party, under the latter circumstances, his allowance is \$2.50 a day. While in service in the Philippine Islands, the allowance is \$2.50 a day, for both aids and assistants, under all conditions, whether on shipboard, in camp, or at the suboffice at Manila. Consequently, the income of an aid from salary and allowance is somewhat over \$1,300 a year. From this sum he must pay his mess bill in camp or on shipboard, or his board bill at hotels, as the case may be. When traveling on official business his expenses are paid by the Government.

As stated above, the position of aid is the lowest in the statutory positions of the field force of the Coast and Geodetic Survey. The steps in the line of promotion are first aid at \$1,100, then to assistant at \$1,200, and then upward by steps of \$200 each to \$2,400 a year. Then there are salaries ranging from \$2,500 to \$4,000 a year. The statutory positions provide for 29 aids at \$1,000 and \$1,100, for 37 assistants at from \$1,200 to \$1,800, and for 38 assistants at salaries ranging from \$2,000 to \$4,000 a year.



JEFFREY "A-16" LOADER ON THE JOB.

ADVANCE CONTRACT NEWS

ADVANCE INFORMATION BIDS ASKED FOR

CONTRACTS AWARDED ITEMIZED PRICES

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS.				
N. D.	Judson	May 25	Grading 8 miles of county road	A. P. Dettmann, Twp. Clk.
Mich.	Ingalls	May 25	Gravel or crushed stone roads	A. M. Larsen
Fla.	Palatka	noon, May 25	29 miles brick, asphalt, asphalt concrete, asphalt block or concrete pavement	R. J. Hancock, Clk., Co. Comrs.
Ind.	Anderson	10 a.m., May 25	Constructing two gravel roads, one brick road and one brick and concrete road in Madison County	E. T. Flahavin, Co. Audr.
Ind.	Evansville	9 a.m., May 25	Paving several streets	Board of Public Works
O.	Springfield	noon, May 25	Paving 5 streets	C. E. Ashburner, City Mgr.
Minn.	Duluth	11 a.m., May 25	Improving Eleventh Ave.	J. A. Farrell, Comr. P. W.
Ind.	Indianapolis	10 a.m., May 25	Constructing pavements and sidewalks	Board of Public Works
N. J.	Jersey City	2 p.m., May 25	Repav. with bit. concr. on macadam or stone foundation	Blvd. Comrs. of County.
Kan.	Hutchinson	3 p.m., May 25	Constr. 72 blocks of concr. sidewalk; 15,000 to 20,000 sq. yds. first-class pavement	City Engr.
N. J.	Wildwood	May 26	1 1/2 mile gravel shouldering	L. Rice, Engr.
Mass.	New Bedford	noon, May 26	81,084 sq. yds. granite or wood block, brick, asphalt, Hassam block or endurite	C. F. Lawton, Supt. of Sts.
Ind.	Richmond	11 a.m., May 26	Constructing road in Center township	L. S. Bowman, Co. Audr.
La.	Alexandria	noon, May 26	Grading and graveling 15 miles; bridges	I. W. Sylvester, Engr.
Ind.	Terre Haute	11 a.m., May 26	Constructing brick road	Thomas Ferguson, Co. Aud.
Ind.	Indianapolis	10 a.m., May 28	Paving and laying sidewalks	B. J. T. Jeup, City Engr.
Cal.	Sacramento	2 p.m., May 28	About 30 miles concrete paving on state highways	State Highway Commission
Cal.	Batavia	May 28	8 miles concrete highway	State Hwy. Comm., Sacram'to.
Ky.	Owensboro	noon, May 28	44,000 sq. yds. bit pavement	E. B. Shifley, City Engr.
Fla.	Bartow	10 a.m., May 28	302,000 sq. yds. asphalt pavement and 9 20-ft. bridges	G. Wollenweber, Engr., Wiu-terhaven
N. Y.	Albany	1 p.m., May 28	Resurfacing, reconstruction and surface treatment in 18 counties; improving roads in two counties	Edwin Duffey, State Highway Commissioner.
N. J.	Camden	May 28	400 sq. yds. 8-inch concrete paving in Diamond Street	A. F. Sayre, City Comr.
Wash.	Olympia	May 28	9 miles highway surfacing	State Highway Commission
Wash.	Montesano	May 28	6,300 ft. 18-ft. asphaltic concrete on concrete	Geo. D. Robertson, Co. Engr.
N. J.	So. Orange	7:45 p.m., May 28	Paving with wood or asphalt block, Warrenite or concrete, 11,150 sq. yds.	I. T. Redfern, Village Engr.
Wash.	Oakville	2 p.m., May 28	6,300 ft. concrete or asphaltic concrete	W. D. Campbell, Co. Aud.
La.	New Orleans	noon, May 28	Constr. 10 miles earth road and 12.48 miles gravel road	Duncan Bule, State Highway Engr.
S. D.	Yankton	9 a.m., May 28	Sidewalks	J. W. Summers, City Aud.
Pa.	Dormont	8 a.m., May 28	1,400 sq. yds. brick pavement and 1,050 ft. curb and gutter	Douglass & McKnight, Union Bank Bldg., Pittsburgh.
Minn.	Duluth	11 a.m., May 28	Grading highways	J. A. Farrell, Comr. P. W.
N. Y.	New York	2 p.m., May 28	Paving with Durax, granite block, concrete and sheet asphalt, also wood block	Bureau of Highways, Municipal Bldg.
Ill.	Cicero	8 p.m., May 28	Granite and asphaltic concrete pavement, water service pipes and house drains	Board of Local Improvements.
Minn.	Buhl	May 28	10 blocks concrete and bitulithic pavement	G. R. Reed, Village Clerk.
Wash.	Oakville	2 p.m., May 28	Asphaltic concrete paving; cost, \$2,880	A. C. Miller, Town Clerk.
O.	Steubenville	7:30 p.m., May 29	15,000 cu. yds. excavation, 4,260 sq. yds. brick or concrete pavement, 3,250 ft. curb and gutter and 14,500 sq. ft. cement walk. (For the Ross Park Realty Co.)	J. N. Leech, Engr.
Minn.	Virginia	8 p.m., May 29	Furnishing road oil	A. E. Bickford, City Clerk.
Wash.	Port Angeles	7:30 p.m., May 29	Paving with concrete	J. L. Bean, City Clerk.
O.	Port Clinton	noon, May 29	Paving with reinforced concrete	W. H. Williamson, Village Clk.
O.	Lebanon	noon, May 29	Paving and setting curb	M. E. Gustin, Village Engr.
Miss.	Greenville	May 29	92,000 sq. yds. concr., Warrenite or asphalt concr.	J. S. Allen, Ch. Engr.
Minn.	Chaska	11 a.m., May 29	8,300 ft. road grading	J. B. Connolly, Co. Aud.
Minn.	Warren	11 a.m., May 29	Grading roads and constructing culverts	A. G. Lundgren, Co. Aud.
N. Y.	New York	10:30 a.m., May 29	Concrete sidewalks, granite block pavements, sheet asphalt, bituminous concr. and redressed granite blocks	Douglas Mathewson, Pres., Boro. of Bronx.
N. J.	Jersey City	May 29	Paving with brick and repaving with granite block	M. I. Fagen, City Clerk.
S. C.	Charleston	7 p.m., May 29	20,000 sq. yds. sheet asphalt and 1,000 sq. yds. wood block	J. H. Dingle, City Engr.
O.	Mansfield	2 p.m., May 29	Brick road construction	J. M. Case, Co. Aud.
Minn.	Alexander	1 p.m., May 29	State and county road	Supt. of Highways.
Ill.	Chicago	11 a.m., May 30	Road work at Ft. Snelling	Quartermaster, Federal Bldg., Chicago.
Ark.	Russellville	noon, May 30	24,000 sq. yds. Tarvia, concrete or asphaltic concrete and 16,000 ft. curbing	W. J. White, Comnr. of Paving, Dist. No. 1.
N. J.	Newark	3:30 p.m., May 31	Paving improvements on a number of streets including hillside brick, asphalt, brick and bitulithic on concrete foundation; curbing, etc.	M. R. Sherrerd, Ch. Engr.
N. Y.	L. I. City	11 a.m., May 31	Laying sidewalks, curbing and paving with granite and asphalt block	M. E. Connolly, Boro Pres.
Ind.	Terre Haute	10 a.m., May 31	Paving with monolithic brick, concrete or wood	Board of Public Works
Mich.	Nashville	2 p.m., May 31	9,690 sq. yds. brick pavement	W. J. Sherman Co., Engrs., Nasby Bldg., Toledo.
Ind.	Evansville	10 a.m., May 31	Road construction	C. B. Beard, Co. Aud.
Minn.	Brainerd	May 31	17 blocks concrete pavement	A. M. Alborn, City Clerk.
Ind.	Madison	7 p.m., June 1	12,950 sq. yds. asphalt, concrete, brick or wood block	H. E. Nichols, City Clerk.
Pa.	Grove City	June 1	Grading, curbing and paving	L. L. McKay, Boro. Sec.
Minn.	Duluth	11 a.m., June 1	Constructing and repairing cement and tile walks	J. A. Farrell, Comr. P. W.
O.	Springfield	noon, June 1	Paving North St.	City Engr.
O.	Dayton	10 a.m., June 2	Paving with brick	County Commissioners.
Ind.	Terre Haute	11 a.m., June 2	Constructing gravel roads	Thomas Ferguson, Co. Aud.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
N. J.	Lakewood.....	1 p.m., June	2..21,720 sq. yds. concr. pavt. and 12,400 ft. of curb.....	Township Clerk.
Ind.	Franklin.....	2 p.m., June	4..Constructing 5,515 ft. gravel road.....	John C. Gregg, Johnson Co. Aud.
Ind.	Bloomington.....	2 p.m., June	4..Road construction.....	Horace Blakely, Monroe Co. Aud.
Ind.	Shoals.....	noon, June	4..Road construction.....	L. D. Haga, Martin Co. Aud.
Va.	Covington.....	2 p.m., June	4..39,700 sq. yds. asphalt, 9,800 sq. yds. asphaltic concrete, 800 sq. yds. brick, 26,570 ft. concrete curb and gutter (separate), 4,210 ft. brick gutter, 1,730 ft. header curb and 5,150 ft. armored curb. Also see "Sewers".....	C. P. Barnet, Engr., Savings Bank Bldg.
N. J.	Perth Amboy.....	June	4..Paving on Amboy-Metuchen road.....	City Clerk.
Ind.	Nashville.....	1 p.m., June	4..Stone and gravel road.....	Omer Morrison, Co. Aud.
N. J.	Westfield.....	8 p.m., June	4..22,800 sq. yds. macadam, 11,000 ft. concrete curb and gutter and 3,700 lin. ft. concrete sidewalks.....	A. W. Vars, Town Engr.
N. D.	Bowbells.....	7 p.m., June	4..Sidewalk construction during 1917.....	A. E. Larson, City Aud.
Ind.	Brownstown.....	1 p.m., June	4..Tarvia macadam and gravel roads.....	Albert Leudtke, Co. Aud.
Ind.	Rushville.....	2 p.m., June	4..Constructing stone roads.....	W. H. McMillin, Co. Aud.
Ind.	Tipton.....	10 a.m., June	4..Constructing gravel roads.....	Oscar Vanness, Co. Aud.
Ind.	South Bend.....	11 a.m., June	4..Three gravel roads.....	A. F. Wolf, Co. Aud.
Wash.	Olympia.....	2 p.m., June	4..Grading, paving with concrete and constr. concr. viaduct.....	Jas. Allen, State Hwy. Commr.
O.	Cincinnati.....	noon, June	4..40,000 gals. coal tar road binder.....	Ernst von Bargen, Pur. Agent.
Minn.	N. St. Paul.....	8 p.m., June	4..Grading and improving Pennsylvania Ave.....	F. J. Armstrong, Engr., Germania Life Bldg., St. Paul.
Ind.	Cannelton.....	noon, June	4..Constructing macadam road.....	M. C. Conway, Co. Aud.
Ind.	Indianapolis.....	10 a.m., June	4..Curbing, sidewalks and paving.....	B. J. T. Jeup, City Engr.
N. D.	Wahpeton.....	8 p.m., June	5..Curbing and hard surface paving.....	S. H. Murray, City Clerk.
Ind.	Rensselaer.....	2 p.m., June	5..Eight stone roads.....	J. P. Hammond, Co. Aud.
Ind.	Logansport.....	10 a.m., June	5..Gravel road.....	A. P. Flynn, Co. Aud.
Ind.	Kokomo.....	10 a.m., June	5..867 ft. gravel road.....	W. L. Benson, Co. Aud.
Ind.	Monticello.....	10 a.m., June	5..One gravel and 2 stone roads.....	A. G. Fisher, Co. Aud.
Ind.	Plymouth.....	2 p.m., June	5..Slag and gravel roads.....	O. H. Weber, Co. Aud.
Ind.	Brazil.....	10.30 a.m., June	5..Limestone road.....	W. O. Graeser, Co. Aud.
Ind.	Corydon.....	2 p.m., June	5..Stone road.....	F. W. Fagel, Co. Aud.
Tenn.	Johnson City.....	7.30 p.m., June	5..25,000 sq. yds. paving, 15,500 ft. curb, etc.....	P. F. McDonald, City Mgr.
Ind.	Knox.....	noon, June	5..Grading and paving highways.....	C. W. Weninger, Co. Aud.
N. C.	Yadkinville.....	June	5..27 miles sand-clay road.....	E. C. Mayberry, Secy.
Colo.	Boulder.....	June	5..Paving streets.....	G. R. Joslyn, City Engr.
Ind.	Mt. Vernon.....	2 p.m., June	5..Constructing 13,321 ft. gravel road.....	J. R. Haines, Posey Co. Aud.
O.	Columbus.....	noon, June	5..Paving with asphalt and brick.....	G. A. Borden, Dir. P. Service.
Ind.	Bedford.....	1 p.m., June	5..Concrete or macadam road.....	E. W. Edwards, Co. Aud.
Ind.	Salem.....	1.30 p.m., June	5..Road work, 28,000 ft.....	E. E. Batt, Co. Aud.
Miss.	Hattiesburg.....	2 p.m., June	5..Improving 45.8 miles of road.....	Herbert Gillis, Chancery Clk.
Ind.	Crawfordsville.....	10 a.m., June	5..Gravel roads.....	Dr. W. F. Batman, Co. Aud.
Ind.	Vincennes.....	2 p.m., June	5..Brick and gravel roads.....	J. I. Muentzer, Co. Aud.
Ind.	Covington.....	2 p.m., June	5..Stone and gravel road.....	H. W. Newlin, Co. Aud.
Fla.	Ft. Lauderdale.....	June	5..15 miles hard surface paving, \$35,000 available.....	H. C. Davis, Engr.
Ind.	Bluffton.....	2 p.m., June	6..3,600 ft. stone streets.....	C. T. Kain, Co. Aud.
La.	Bay Minette.....	June	6..Improving 18 miles of highway.....	L. Glendenning, Road Commr.
Ind.	Columbus.....	10 a.m., June	6..12,950 ft. gravel road.....	W. H. Scott, Bartholomew Co. Aud.
Ind.	Shelbyville.....	10 a.m., June	6..Completing unfinished road.....	Sam C. Mauck, Co. Aud.
Ind.	Lafayette.....	10 a.m., June	6..3.4 miles gravel road.....	G. W. Baxter, Co. Aud.
Ore.	Roseburg.....	3 p.m., June	7..Constructing county road.....	E. H. Lenox, Co. Clerk.
Ind.	Valparaiso.....	2 p.m., June	7..Gravel road.....	C. A. Blachly, Co. Aud.
Ind.	Ossian.....	7.30 p.m., June	7..Street paving.....	Board of Trustees.
Ind.	Corydon.....	1 p.m., June	7..Rock road construction.....	S. C. Mauck, Harrison Co. Aud.
Ind.	La Porte.....	10 a.m., June	7..Road construction.....	Fred A. Hausheer, La Porte Co. Aud.
La.	Crowley.....	June	8..Gravelling, draining and grading, cost \$350,000.....	H. W. Bell, Engr., Laurel, Miss.
W. Va.	Fayetteville.....	June	11..16.3 miles grading and draining.....	T. F. Malloy, Road Engr., Landisburg.
Ind.	Peru.....	noon, June	11..County roads.....	S. A. McElheny, Co. Aud.
Wash.	Seattle.....	10 a.m., June	11..Street paving.....	Co. Comrs.
N. J.	Morristown.....	2 p.m., June	11..5,541 sq. yds. Amesite, 3,037 sq. yds. brick or concrete and 5,500 sq. yds. macadam; furn. and applying oil.....	F. S. Smith, Co. Engr.
Ala.	Troy.....	8 p.m., June	12..29,500 sq. yds. brick pavement.....	City Clerk.
Pa.	Harrisburg.....	June	12..36,170 ft. brick or concrete; 1,270 ft. of brick, 26 ft. wide; 47,051 ft. brick and concrete.....	State Highway Commission.
N. J.	Salem.....	June	15..3.5 miles 18-ft. concrete road.....	Co. Engr.
Pa.	Elton.....	June	20..5 miles of permanent highway, brick or concrete.....	O. P. Thomas, Engr., Leader Bldg., Johnstown.
Ind.	Shelbyville.....	July	17..Constructing cement sidewalks.....	City Clerk.
SEWERAGE.				
N. Y.	New York.....	2 p.m., May	25..Constructing receiving basins.....	Bur. of Sewers, Room 2103, Municipal Bldg.
Ind.	Evansville.....	9 a.m., May	25..455 ft. 10 and 12-in. sewer.....	Board of Public Works.
Mo.	Mt. Rainier.....	2.30 p.m., May	25..10 miles sanitary sewers.....	Town Clerk.
Ind.	Valparaiso.....	May	25..Sewer system, cost \$28,000.....	C. L. Nelson, City Engr.
Minn.	Benson.....	May	25..153 miles clay or cement tile drains; cost, \$478,000.....	D. P. Carney, Co. Aud.
O.	Springfield.....	noon, May	25..Sanitary sewer.....	City Engr.
N. Y.	New York.....	2 p.m., May	25..Tunnel relief sewer in West 46th St.....	Bur. of Sewers, Room 2103, Municipal Bldg.
Neb.	Kimball.....	5 p.m., May	25..Constructing sewer system.....	J. A. Rodmar Village Clerk.
Minn.	Luverne.....	10 a.m., May	26..Tile drainage ditch; cost, \$20,000.....	O. Skyberg, Co. Aud.
La.	Alexandria.....	noon, May	26..Laying drains.....	Board of Supervisors of Rapides Parish.
La.	West Burlington.....	7 p.m., May	28..15,000 ft. 8. to 12-in. sewer pipe, sewage pump plant and disposal plant.....	W. J. Gieselman, City Clerk.
Cal.	Los Angeles.....	2 p.m., May	28..Two vertical sewage pumping units.....	H. J. Leland, Co. Clerk.
N. J.	So. Orange.....	7.45 p.m., May	28..1,800 ft. 15-in. sewers.....	T. Redfern, Village Engr.
Wis.	Whitefish Bay.....	7.30 p.m., May	28..39,147 ft. 8 to 30-in. sewer, etc.....	W. H. Volkman, Village Clk., Route 3, Station C, Box 213, Milwaukee.
N. Y.	Syracuse.....	1.30 p.m., May	28..40,000 ft. 6 to 54-in. sewer.....	H. C. Allen, City Engr.
Manitoba	Sandford.....	noon, May	28..Excavating drains.....	H. Grills, Sec.-Treas.
Wis.	Oshkosh.....	2 p.m., May	28..Sewers in 4 streets.....	Board of Public Works.
Ill.	West Chicago.....	8 p.m., May	28..17 miles 8 to 24-in. sewers, sedimentation basin, 8 filter beds, etc.....	Marr, Green & Co., 17 North La Salle St., Chicago.
Minn.	Duluth.....	11 a.m., May	28..Sanitary sewer in Calvary Road.....	J. A. Farrell, Comr. P. W.
Minn.	Duluth.....	11 a.m., May	28..Sewer in Eighth St.....	J. A. Farrell, Comr. P. W.
Minn.	Duluth.....	11 a.m., May	29..Sewer construction materials.....	J. A. Farrell, Comr. P. W.
Tenn.	Jackson.....	10 a.m., May	29..46,000 ft. 6 to 12-in. sewer and 162 manholes.....	City Engr.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
O.	Barberton	noon, May 29	Sewage treatment plant, sludge beds, pump and ejector house and 1,100 ft. of 30-in. outfall sewer	T. J. Davies, Dir. P. S.
La.	New Iberia	7:30 p.m., May 29	Sanitary sewer and disposal plant	X. A. Kramer, Engr., Magnolia, Miss.
O.	Lebanon	noon, May 29	2,300 ft. 12 to 20-inch vitrified sewers	M. E. Gustin, Village Clerk.
Miss.	Leland	8 p.m., May 29	Four miles 8-in., 1 mile 10-in. sewer, 55 manholes, 18 flush tanks, disposal plant and pumping station	F. L. Wilcox, Engr., Syndicate Trust Bldg., St. Louis, Mo.
O.	Steubenville	7:30 p.m., May 29	6,396 ft. 12 and 18-in. sewer and 30 manholes	J. N. Leech, Engr.
Minn.	Wabasha	7:30 p.m., May 29	2,800 ft. 8 and 12-in. sewer	J. M. Schouweller, City Clerk.
la.	Creston	May 31	300,000-gal. Imhoff disposal plant, filter beds and outfall sewer	T. S. De Lay, Engr.
Fla.	Jacksonville	4 p.m., May 31	20,100 ft. 8 to 27-in. sewers	L. D. Smoot, Comr. P. W.
Ill.	Rushville	2 p.m., June 1	Pumping plant for drainage and levee district	J. M. Kelly, Sec'y, Lake Drainage and Levee District.
India.	Calcutta	2 p.m., June 1	Storm water pumping plant	C. C. Chatterjee, Sec. Corp. of Calcutta
Wis.	Burlington	2 p.m., June 2	About 9,000 ft. 6 to 42-in. sewer	P. J. Hurtgen, City Engr.
Va.	Covington	2 p.m., June 2	3,455 ft. 6 to 30-in. sewers (See "Streets & Roads")	C. P. Barnett, Engr.
S. D.	Mitchell	8 p.m., June 4	Storm sewer, about 1 1/4 mile	R. E. Davis, City Aud.
Minn.	Warren	8 p.m., June 4	Sewer construction	J. R. Naeseth, City Recorder.
N. Y.	Olean	8 p.m., June 5	270 ft. 8-in. sewer	E. E. Allen, Supt. Streets.
O.	Columbus	noon, June 5	Laying water and sewer connections	G. A. Borden, Dir. P. Service.
N. J.	Newark	June 5	Section of sewer at Greenville	Passaic Valley Sewerage Com.
Tenn.	Johnson City	7:30 p.m., June 5	Two jobs sewer work; about 7,600 ft. 8 to 15-in.	P. F. McDonald, Comr. and Engr.
Va.	Vinton	noon, June 6	1,315 ft. of sewer	H. C. Craft, Town Sergeant.
S. D.	Madison	11 a.m., June 7	Drainage ditch, about 220,000 ft. of tile	C. A. Trimmer, Engr.
Cal.	Los Angeles	2 p.m., June 11	Construction of sewage disposal plant at county farm	H. J. Lelande, Co. Clerk.
N. J.	Newark	June 12	Kearny-Harrison intercepting sewers	Passaic Valley Sewerage Com.
N. J.	Newark	June 19	Foundation for pumping station, etc.	Passaic Valley Sewerage Com.
N. J.	Newark	June 26	Generators and engines	Passaic Valley Sewerage Com.

WATER SUPPLY.

Md.	Mt. Rainier	2:30 p.m., May 25	10 miles 4-in. and 8-in. water mains, pumping station and steel tank and tower	Town Clerk
Mass.	Boston	noon, May 28	142 tons c. l. specials	Pat'k O'Hearn, Acting Supt. of Supplies.
O.	Canton	noon, May 28	2 or 3 electrical centrifugal pumps; total capacity, 15,000 gals. per day	L. B. Ohliger, Supt. of W. W.
Ont.	Sudbury	1 p.m., May 28	500,000-gal. steel standpipe	H. H. Martindale, Supt.
Neb.	Tekamah	8 p.m., May 28	3,300 ft. water mains	M. S. McGraw, City Clerk.
Ont.	Brantford	8 p.m., May 28	Two 300-g.p.m. electrically-driven turbine pumps, motors, etc.	Chipman & Powers, Engrs., Mail Bldg., Toronto.
N. D.	Hillsboro	8 p.m., May 28	Concrete well	N. G. Nyhus, City Clerk.
Minn.	Wabasha	7:30 p.m., May 29	3,250 ft. water main	J. M. Schouweller, City Clerk.
O.	Akron	noon, May 29	3,000 ft. 8-in. Class B pipe, 144 ft. 6-in. Class B pipe and 72 ft. 4-in. c. l. pipe	Engrg. Dept., W't'rw'ks Office.
N. Y.	New York	10:30 a.m., May 31	Pipes, valves and fittings	Board of Health, Center and Walker Sts.
Wis.	Two Rivers	May 31	3,800 ft. 6-in. water mains	G. H. Wiehausen, Supt.
Ill.	Rushville	2 p.m., June 1	Electrically-driven pumping plant	Bd. of Comrs. of Kelly Lake Drainage & Levee District.
R. I.	Ft. Greble	11 a.m., June 2	1,000,000-gal. concrete reservoir	Quartermaster, Nounort, R. I.
la.	Riceville	7 p.m., June 3	10-in. well, 500 ft. deep	H. A. Yager, Town Clerk.
S. D.	Milbank	8 p.m., June 4	500,000 gals. mechanical plant and 300 g. p. m. motor centrifugal pump	L. P. Wolff, Engr., Germania Life Bldg., St. Paul.
Pa.	Titusville	7 p.m., June 4	Gas or oil engine-driven 3,000,000-gal. pump	K. R. Kightlinger, City Engr.
Wis.	Barron	June 4	14-in. or 16-in. deep well	W. C. Buck, Engr., Minneapolis
N. Y.	Auburn	1 p.m., June 5	Sand filtration plant, pipe line, etc.	Hazen, Whipple & Fuller, Engrs., 30 E. 42nd St., New York City.
Ind.	Kendallville	June 12	Water works, including 500,000-gal. concrete reservoir, piping and 3 turbine force pumps	Geo. Champe, Engr., Nasby Bldg. Toledo.

MISCELLANEOUS.

Pa.	McKees Rocks	6 p.m., May 25	400 ft. chain link wire fence	Stowe Twp. School District
Minn.	Stillwater	May 26	Drainage ditch; cost, \$14,000	N. A. Nelson, Co. Aud.
Ind.	Anderson	10 a.m., May 26	Drainage ditch	LeRoy Free, Supt. Constr.
D. C.	Washington	May 28	Bridge cranes, 2 to 80-ton	Bureau of Yards & Docks.
N. Y.	New York	10:30 a.m., May 28	Furnishing and installing underground cables; parts for fire alarm posts; installing posts	Robt. Adamson, Fire Comr.
N. D.	Bismarck	8 p.m., May 28	One street flusher	C. L. Burton, City Aud.
O.	Ashtabula	noon, May 30	Second-hand Brockway motor truck, 1 1/4 ton, not over 2 years old and not less than 35 h.p., to be bought by city	J. W. Prine, City Mgr.
Mo.	Cape Girardeau	10 a.m., June 1	27,500 sq. yds. concrete paving (reinforced) for protecting channel and levee slopes	W. A. O'Brien, Ch. Engr.
Pa.	Pittsburgh	10 a.m., June 1	Changing channel of Little Deer Creek	County Engr., Court House
O.	Canton	10 a.m., June 1	1,672 tons slag for highways	W. C. Schick, Co. Clerk.
Minn.	Duluth	11 a.m., June 4	Furnishing 32 truck tires	P. G. Phillips, Comr. of Public Utilities.
Ind.	Logansport	10 a.m., June 5	10-ton steam road roller and scarifier; water tank, pump and sprinkler	A. P. Flynn, Co. Aud.
Minn.	Ada	2 p.m., June 5	94,000 cu. yds. of grading and 8 bridges and culverts	D. E. Fulton, Co. Aud.
Neb.	Fremont	10 a.m., June 5	Drainage ditch	W. E. Barz, Co. Clerk.
Minn.	Owatonna	11 a.m., June 6	Drainage ditch; cost, \$18,782	G. A. Ralph, Engr., Fulton Block, St. Paul.
Minn.	Owatonna	11 a.m., June 6	Drainage ditch, cost \$18,783	County Auditor
Ala.	Montgomery	2 p.m., June 9	14,000 tons gravel or crushed stone	U. S. Engineer Office.
Ind.	Frankfort	June 9	Furnishing voting machines	Edward Spray, Co. Aud.
Ark.	Lonoake	noon, June 14	Drainage work requiring 3,000,000 cu. yds. dredge ditching 850 acres of clearing and 52,000 cu. yds. team ditching	Chanline & Beard Attorneys
Ala.	Montgomery	June 16	14,000 bbls. Portland cement	U. S. Engineer Office.

STREETS AND ROADS.

Birmingham, Ala.—City ordered pavement on 24th St. from Second to Sixth Aves. south.

Tucson, Ariz.—Council passed resolution for the paving of the alley between

5th Ave. and 6th Ave., through blocks 83 and 92, from the south line of Pennington St. and Toole Ave. to the north line of Broadway.

Tucson, Ariz.—Council referred to the City Engr. petition asking that the City Engr. be instructed to prepare plans and

specifications for widening West Broadway from Church St. to Meyer, and opening Broadway from South Meyer to South Main.

San Diego, Cal.—City will pave with asphalt pavement laid upon a cement base Walnut Ave., Albatross St., Upas

St., Brant St., Thorn St., Curlew St. and Spruce St.

San Diego, Cal.—Right of way for the continuation of the state highway from Flynn Springs on to the juncture with the old Imperial Valley road at Summit is being cleared up by Supervisor Charles L. Good. State highway engineers are now making survey of route and bids for grading from Flynn Springs to Buckman Springs will be asked in June, according to information.

Danbury, Conn.—Acting in connection with other civic bodies throughout the county the Bridgeport Chamber of Commerce has adopted a resolution urging upon the state highway department the necessity and advisability of constructing a trunk highway between Bridgeport and Danbury through the towns of Fairfield, Easton, Redding and Bethel along the Black Rock turnpike.

Bartow, Fla.—Polk county voted in favor of issuing \$150,000 road and bridge district bonds.

Kissimmee, Fla.—Osceola county will vote in the near future on the question of issuing \$100,000 road district Nos. 1 and 2 bonds.

St. Augustine, Fla.—County Comrs. orders repairs on Dixie Highway north of the city.

Tampa, Fla.—Requests were presented to the board of public works calling attention to the urgent need for paving on a portion of 10th St., and also on West St., and one block on Ola Ave.

Montezuma, Ga.—An election will be held May 30 on the question of issuing \$25,000 street improvement bonds.

West Point, Ga.—City election May 29 to vote on \$20,000 bonds to pave, grade, drain or macadamize streets. J. T. Johnson, mayor.

Council, Ida.—Adams County voted \$100,000 good roads bonds. Of this issue \$80,000 will be used for the north and south highway and \$20,000 for branch road improvement.

Pocatello, Ida.—Mayor Bean recommended resurfacing of West Center St. from Garfield Ave. to Johnson and purchase of a portable paving repair outfit.

Carlinville, Ill.—Council passes appropriations: Lighting streets and public buildings, \$4,500; public improvements, \$1,500; repairs to streets and sidewalks, \$2,000.

Angola, Ind.—Bids received June 5, 1917, at 1 p. m., by Treas. of Steuben County, for sale, \$4,950 and \$6,360 highway improvement bonds, 4½ per cent, 15 years. Frank T. Dole, Treas.

Bedford, Ind.—Bids received May 28, 1917, at 2 p. m., by treasurer of Lawrence county, for sale \$4,500 highway improvement bonds, 4½ per cent, ten years. Wm. E. Butler, Treasurer.

Bluffton, Ind.—Bids received June 1, 1917, at 2 p. m., by treasurer of Wells county, for sale \$3,780, \$5,340, \$3,700, \$4,200, \$9,000, \$6,940, \$6,940, \$6,940 and \$11,000 highway improvement bonds, 4½ per cent, ten years. O. E. Lesh, Treasurer.

Decatur, Ind.—Bids received May 28, 1917, at 10 a. m., by treasurer of Adams county, for sale \$6,560, \$8,800, \$4,720 and \$5,440 highway improvement bonds, 4½ per cent, ten years. G. E. Kinzie, Treasurer.

Franklin, Ind.—Bids received May 30, 1917, at 10 a. m., by treasurer of Johnson county, for sale \$6,200 highway improvement bonds, 4½ per cent, ten years. E. G. Brewer, Treasurer.

Goshen, Ind.—Bids received June 2, 1917, at 10 a. m., by treasurer of Elkhart county, for sale \$23,400 highway improvement bonds, 4½ per cent, ten years. W. H. Winship, Treasurer.

Greensburg, Ind.—Bids received June 7, 1917, at 2 p. m., by treasurer of Decatur county, for sale \$3,200 highway improvement bonds, 4½ per cent, ten years. Albert Bolling, Treasurer.

Greencastle, Ind.—Treasurer Ruyan, Putnam County, sold a \$21,700 issue of road bonds to Gavin L. Payne, of Indianapolis, for par and \$22.50; an issue of \$11,300 for par and \$12.50; an issue of \$7,500 for par and \$22. J. F. Wild, of Indianapolis, received an issue of \$9,000 for par and \$16.

Greensburg, Ind.—County Treasurer Bolling received no bids for the sale of bonds for the Skirt road, in Washington Twp. War situation is given as the cause for the failure of bidders to respond. They will be advertised again.

Hartford City, Ind.—Bids received June 4, 1917, at 12 m., by Treasurer of Blackford County, for sale, \$3,600 highway improvement bonds, 4½ per cent, ten years. John Hasson, Treas.

Lafayette, Ind.—Bids received June 8, 1917, at 2 p. m., by treasurer of Tippecanoe county, for sale \$5,600 highway improvement bonds, 4½ per cent, ten years. Harry G. Leslie, Treasurer.

LaPorte, Ind.—Bids received May 29, 1917, at 10 a. m., by treasurer of LaPorte county, for sale \$23,600 and \$8,800 highway improvement bonds, 4½ per cent, ten years. Carl Pusch, Treasurer.

Mt. Vernon, Ind.—Bids received June 5, 1917, at 2 p. m., by treasurer of Posey county, for sale \$3,300 and \$8,200 highway improvement bonds, 4½ per cent, ten years. Geo. J. Ehrhardt, Treasurer.

Ossian, Ind.—Town plans paving of Jefferson St.; cost, about \$6,355.

Peru, Ind.—County commissioners sold the Elias Butt road on the line dividing Peru and Erie townships to John L. Miller, of Bunker Hill, \$5,120.

Peru, Ind.—Bids received May 31, 1917, at 2 p. m., by treasurer of Miami county, for sale \$37,200 highway improvement bonds, 4½ per cent, ten years. A. B. Zook, Treasurer.

Shelbyville, Ind.—Council adopted resolution for cement sidewalks on Pennsylvania St. from Hamilton to Vine.

Sioux City, Ia.—City council rejected bids on paving of several alleys.

Sioux City, Ia.—City council granted petition for the paving of South St., Aubin St. from Sixth St. to Glenn St.

Sioux City, Ia.—City will pave S. Howard St., between Dace Ave. and Chicago Ave.; also W. 13th St., from Main to Perry Creek.

Hutchinson, Kan.—The city attorney was instructed to draw up a resolution providing for curbing and guttering on Plum St. between Aves. A and B.

Colfax, La.—Board of supervisors of Grant parish road district No. 8 rejected bids for the purchase of the bond issue of \$150,000 for the building of the Jefferson highway through Grant parish and other branch roads. Bids were all rejected, as less than par. The board will discuss the advisability of building the highway by contract under the supervision of the state highway department.

Annapolis, Md.—Council rejected bids for paving Cathedral St., between Charles and South Sts., being too high.

Boston, Mass.—Governor McCall signed the \$4,000,000 bill for the extension of Stewart St. and the widening of Eliot St.

Fitchburg, Mass.—Council orders sidewalks in Davis St., Highland Court and Fairmount St., and laying out Cliff and Beekman Sts. and Milk St. extension.

New Bedford, Mass.—Board of aldermen ordered the following work done: Grinnell St., Dartmouth St. to County St., macadam; Circuit St., Bolton St. to Rockdale Ave., gutters and cinder walk; Bedford and Waverly Sts., grading and cinder walks; Ash St., Kempton St. to Middle St., patch pavement; North St., Purchase St. to Pleasant St., block paving, jointed; Whitman St., Bowditch St. to Brook St., gutters and cinder walks, both sides, east half block; Irvington St., Acushnet Ave. to Bowditch St., grading; Church St. from Coffin Ave. to Nash Rd., macadam.

Pittsfield, Mass.—Council adopted an order to provide \$1,100 for a sidewalk on Plunkett St. from Tyler St. to the north side of St. Mary's Church.

Lansing, Mich.—City will vote June 14 a \$75,500 bond issue for paving Franklin Ave. and Pennsylvania Ave., and the widening and repaving of Washington Ave.

Pontiac, Mich.—Commission has directed the engineer to prepare plans and estimates for paving the parts of the street under the Grank Trunk railroad bridges on Lawrence Pike and Orchard Lake Aves.

Pontiac, Mich.—Specifications for construction of cement walk laid by contractors, which had been prepared by the engineer at the request of the commission, were accepted, approved and filed in the office of the city clerk.

Duluth, Minn.—Owing to the prevailing high cost of construction material, County Auditor Odin Halden rejected bids for the construction of County Ditch No. 8 and its system of roads and bridges at Hermantown and Canosia.

Fairbault, Minn.—Race county will receive \$16,000 federal road this year. Frank M. Kaisersatt, Co. Aud.

Hattisburg, Miss.—Board of Supervisors ordered bids advertised for the construction of nearly 46 miles of roads in Forrest County; cost to be covered by the recent road bond issue for this purpose, and Engr. Frank Myers estimates the cost at \$81,694.10.

Paulding, Miss.—Bd. of Supervisors sold to S. L. McLaurin of Brandon, Miss., \$10,000 of 6 per cent road bonds of Supervisors' District No. 5.

Atlantic City, N. J.—State highway commission has set June 15 for a hearing in this city on the immediate paving of the White House Pike from Absecon to Camden.

Montclair, N. J.—Initial proceedings for the repaving of 8 streets on concrete bases were taken by the town board of commissioners when unanimous consent ordinances to cover each section of improvement were introduced by Street Commissioner E. Mortimer Harrison. Estimated cost of the entire project will be in the vicinity of \$500,000. Objections to the work will be heard May 29. Streets for the new pavement are in Belleville Ave., Upper Montclair, from Upper Mountain Ave. to Park St.; Union St., from Gates to South Mountain Ave.; Church St., from Bloomfield Ave. to Orange road; Orange road from Bloomfield Ave. to Elm St.; South Mountain Ave., from Llewellyn road to Bloomfield Ave.; Gates Ave., from Bloomfield to South Mountain; Greenwood Ave., from Bloomfield to Glenridge Ave., and Glenridge Ave., from Bloomfield to Greenwood Ave.

Newton, N. J.—The Sussex county board of freeholders has adopted a resolution to grade and temporarily pave the entrance route into Sussex borough. This is a continuation of the Ross's Corner-Sussex road.

Onklyn, N. J.—Council votes to lay concrete curb and gutters and macadam streets on Cedar Ave. from Newton to White Horse Pike; Congress Ave., between Madison and Sylvan; Holly Ave., between Madison and the Ridgway farm; Sylvan Ave. between Holly and Congress.

Rutherford, N. J.—Council passed ordinance for pavement on Raymond Ave.

Weehawken, N. J.—Town council, West New York, plans to pave portion Bergenline Ave., asphalt block or bituminous concrete, concrete base, C. Swenson, Clerk.

Amsterdam, N. Y.—Council petitioned by property owners on Steadwell Ave. north of Guy Park Ave. to grade the street and construct sewer and water main for an approximate distance of about 500 ft. Was referred to the public works committee for consideration.

Amsterdam, N. Y.—Council votes to repave East Main St. from the easterly corner of Market St. to the easterly corner of Hamilton St.; also Schuyler St. between East Main and Grove Sts., paved with granite blocks, and Cherry St. between Railroad and Walnut Sts., with a 7-in. concrete pavement.

Amsterdam, N. Y.—Aldermen voted to grade Church St. from Kellogg St. to Clizbe Ave. City clerk was instructed to advertise for bids for the work.

Brooklyn, N. Y.—Bay Ridge local board reported favorably on grading and laying sidewalks and the asphalt paving of 78th St. between 6th and 7th Aves.; the placing of a preliminary pavement on 81st St. from Colonial Rd. to Narrows Ave., and other improvements.

Brooklyn, N. Y.—It is announced that Queens Park Commissioner John Weller will shortly receive \$25,000 to build a road from Neponsit to the Government reservation at Rockaway Point. It will be 25 ft. wide and run through Jacob A. Riis Park.

Brightwater, N. Y.—Citizens voted \$21,000 road improvement bonds. Pierre T. Ackerson, Village Clk.

Carthage, N. Y.—Bd. of Trustees instructed Village Engr. J. P. Brownell to prepare the specifications for the work of the contemplated improvement in Church St.

Little Falls, N. Y.—Board of public works rejected bids for paving of Diamond St., on account of a clerical error which had been made in advertising.

Olean, N. Y.—Council granted petition to pave 9th St. from Washington to Irving St.

Newtown, N. Y.—See "Sewerage."

Utica, N. Y.—City will pave Clinton Place from Genesee to Kemble; Jewett Place, from Genesee to Kemble; Huntington St., from Cooner to Varick; Washington St., from Lafayette to the Erie Canal; Main St., from First to Second; Plant St., from the end of the stone pavement to Francis and Howard Aves., from Rutger to South. City Engineer, Joseph Kempter.

Utica, N. Y.—Common Council authorized Commr. of Public Works Harry R. Hayes to direct the New York State

Railways to lay new rails and paving on several miles of streets about the city and to repair the paving about the rails in several miles of other streets.

Utica, N. Y.—Council voted to issue public improvement bonds for paving in the amount of \$14,737.55.

Watertown, N. Y.—Board of public works allowed \$200 for repairs of the road in Davidson St., and \$50 for West Paddock St.; also \$240 for replacing old concrete walks in Brainard St.

Yonkers, N. Y.—City Engr. will prepare plans and specifications for the laying of a permanent pavement in Clinton St., from Hudson St. to St. Mary's St.

Yonkers, N. Y.—Ordinance adopted for the construction of the sidewalks on the east side of Palisade Ave., from Elm St. to Ashburton Ave.

Yonkers, N. Y.—Public Works Comr. to resurface Caryl Ave. and Landscape Ave.

Asheville, N. C.—Board of Aldermen of the town of West Asheville passed an order authorizing that a concrete sidewalk be laid on Hanover St. from Haywood Rd. to Fourth Ave., a distance of about 1,500 ft.

Louisburg, N. C.—Town has authorized \$125,000 street and sidewalk bonds.

Canton, O.—County Commissioner Ake announced when bids are received next month for the second consignment of county road improvement jobs, another effort will be made to get a suitable bid for the contract to pave the Ravenna-Louisville Road, extending north into Mariboro Twp. from "Death Curve." An effort was made to sell this work, but the only bid received was above the county surveyor's estimate. Legal advertising is to be commenced immediately for the letting of contracts for paving Raff Road, west of Canton, for the Canton-Richville Road, which is the extension of Navarre Road S. W., for the Minerva-Robertsville Road, and for the Canton-Bolivar Road. Will be let the latter part of June.

Cincinnati, O.—City will grade Haight Ave. from Hamilton Ave. to Bruce Ave. Fred Schneller, clerk.

Cincinnati, O.—City will improve Seloto St. from Rochelle St. to University Ave.

Cincinnati, O.—Ordinance approved to proceed with the improvement of Haven St. from Forest Ave. to Ehrman Ave. by paving. Geo. Puchta, mayor.

Columbus, O.—City will construct cement sidewalk on both sides of Sullivan Ave. George J. Karb, mayor.

Geneva, O.—County Commissioner J. C. Anderson states that the plans and specifications for the proposed county line road pavement, from Pike's Corners to the Old Tavern, are about ready to submit to the joint board of commissioners of Ashtabula and Lake Counties for their approval. Also called attention to the fact that a survey is being made of the road to the lake from the North Geneva paving to the shore.

Hamilton, O.—Anderson and Federal Asphalt companies may purchase \$10,000 worth of city bonds. The proceeds will be used for the recaulking of city gas mains in streets to be paved.

Hamilton, O.—The sum of \$4,000 was appropriated to repair city streets which are paved with sheet asphalt.

Hamilton, O.—City Engineer Frank Weaver submitted an estimate of the cost of paving part of Shuler Ave., at \$10,949.30.

Mansfield, O.—Ordinance approved to proceed with the improvement of Foster St. from 3d St. to 4th St. by paving with vitrified brick or block, together with the necessary curbing, headers, storm and sub-drainage, and authorizing the issuance and sale of bonds to pay for improvements. G. H. Lowrey, mayor.

Middletown, O.—Butler county received bids May 31 for the sale of \$115,000 of county road bonds to be dated June 1st to mature in 5 years and bear 4½ per cent. interest. The money is to be used for the paving of the Dixie highway north of Middletown to the Warren county line and south of Exello bridge to the paved road south of LeSourdsville.

Milan, O.—R. W. Sweet, clerk, receiving bids June 15 for the purchase of \$6,700 bonds to provide funds to pay the village's estimated proportion of the cost of the improvement of the extension of Inter-County Highway No. 294 and \$3,600 for the purpose of providing funds to pay the village's estimated proportion of the cost, except that part which is to be assessed against the abutting property owners.

Salem, Ore.—City will improve one block of Terry St. Petition for the improvement of three blocks of 19th St. and of N. Church St. was referred to the street committee.

Salem, Ore.—Common council intends improving portion of Portland road, Fifth St., Church St. and D St., with grade, curb and paving.

Butler, Pa.—The engineer was instructed to prepare a profile for the grade of McClain Ave in the First Ward.

Butler, Pa.—Council passed ordinance for the grading of Oak St. from Polk to Charles.

Erie, Pa.—May grand jury recommended that guide posts and sign boards be placed at all cross roads in the county to direct travelers. Also that county officials employ their best efforts to promote the repair, maintenance and rebuilding of roads.

Erie, Pa.—Council referred to the committee of the whole ordinance for the paving of East Ave. from 21st to 28th Sts., introduced by Street Director W. D. Kinney.

Erie, Pa.—The Andrews Land Co. asked to have Pennsylvania Ave. paved from 3d to 6th Sts., suggesting the use of water-bound slug macadam. Council referred the request to the engineering department for a report on the adaptability of the suggested material.

Montourville, Pa.—L'coming County will vote on June 5 on a proposition of issuing \$30,000 worth of road improvement bonds, to join with the State Highway Department in improving State highways in L'coming county.

Kingstown, R. I.—South Kingstown town council appropriated \$1,500 for rebuilding the Kingstown road.

Providence, R. I.—All bids received by the Providence water supply board for the construction of new highways in the town of Foster have been rejected and the work will not be prosecuted until labor costs are a more normal figure, according to an announcement by the board.

Erwin, Tenn.—County voted \$100,000 bonds to build roads.

Springfield, Tenn.—County commissioners plan election to vote on \$150,000 bonds to improve roads.

Austin, Tex.—The Attorney-General's Department approved a \$60,000 issue of Oldham County special road bonds, payable within forty years, 5-year option and bearing 5 per cent interest.

Athens, Tenn.—County defeated \$300,000 bonds to build roads.

Bastrop, Tex.—Bastrop county votes May 26 on the question of issuing \$150,000 Elgin precinct road bonds.

Dallas, Tex.—City commission ordered parts of Parnell St., Grand Ave., Gould Ave., Ferris St. and Parkview Ave. paved.

McAllen, Tex.—Voted in favor of issuing \$16,000 street bonds.

Fort Worth, Tex.—Acting upon the request of County Commissioner Wall, the city commission has agreed to cooperate with the county in improving the badly worn road between the city and Riverside by supplying about 75 loads of gravel for the purpose, which will be used at the extreme end of East Belknap St.

Ogden, Utah.—Ogden, Logan & Idaho Ry. Co. will repave along the tracks of the street railway system.

Lynchburg, Va.—Board of aldermen instructed the city attorney to proceed with condemnation proceedings to straighten Victoria Ave.

Williamson, W. Va.—Mingo county has voted in favor of issuing \$1,000,000 road bonds.

Bellingham, Wash.—The county commissioners have formally approved the construction of over 50 miles of highway throughout the county, which will be hard surfaced. The program so far adopted is as follows: 12½ miles between end of the present Northeast Diagonal paving and Deming, and extending a mile north from this to Lawrence; this stretch is generally known as the Deming-Lawrence Road, the estimated cost being \$15,200 per mile, a total cost of \$186,950. 2¼ miles from Bellingham to Geneva, on Lake Whatcom, and along the shore of the lake; estimated cost, \$18,900 per mile; a total cost of \$51,100. 5 miles of road from Ferndale due west to the Gulf of Georgia; estimated cost, \$16,450 per mile, or a total cost of \$82,000. The Blaine Ferndale Road, for a distance of 7.3-10 miles, ending at Pleasant Valley; estimated cost, \$14,950 per mile, or a total cost of \$109,100. 7 miles on the Ferndale-Lynden Road, from Fern-

dale to the intersection with the Glen-dale Road; estimated cost, \$14,940 per mile, or a total of \$104,510. Five miles on the Everson-Nooksack Road; estimated cost, \$14,970 per mile, or a total of \$74,850. The roads will be paved for a width of 16 ft.

Bellingham, Wash.—City Engineer W. H. North submitted following estimates to council for street work: paving Grand Ave., \$4,600 for concrete and \$4,990 for asphalt; paving Utter St., \$8,740 for concrete and \$9,140 for asphalt; clearing, grubbing and grading Lincoln St., \$470.

Raymond, Wash.—The board of county commissioners has called a special county election for June 12, for the purpose of voting on a bond issue of approximately \$280,000, for constructing a system of permanent highways through the Willapa valley and in opening up for travel the last link of the National Park highway connecting the north and south ends of the county.

Raymond, Wash.—Pacific County commissioners ordered a special county election for June 12 to vote on a bond issue of approximately \$280,000, to be used in constructing a system of permanent highways through the Willapa Valley and in opening up for travel the last link of the National Park Highway, connecting the north and south sides of the county.

Seattle, Wash.—County Engineer Samuel Humes has been instructed to prepare plans for the construction of four new county roads, one between Renton and Renton Junction, the John P. Jones Road, S. H. Metzler Road and A. M. Duncan Road, all to be graded and gravel surfaced.

Snoqualmie, Wash.—R. E. Nye, town clerk, reports council has passed a resolution ordering improvement of King St., et al., by grading, graveling, etc.; cost, \$265.

Washucna, Wash.—H. F. Bachman, clerk, receiving bids until June 13 for \$10,000 6 per cent 20-year road bonds.

Waitsburg, Wash.—J. B. Loundagin, city clerk, reports an ordinance passed ordering improvement of 8th St. from east line of Coppel Ave. to the west line of Cemetery St., by grading, graveling and macadamizing.

Appleton, Wis.—Outagamie County Clerk Wm. F. Wolf receiving bids June 1 for \$400,000 highway improvement.

Chippewa Falls, Wis.—Council rejected a resolution to build a sidewalk on River St. from Prairie to Herschel St.

Chippewa Falls, Wis.—Council passed a resolution to build a curb and gutter on the east side of Carson St. from Columbia to Grand Ave.

Superior, Wis.—South End Superior Commercial Club decided to circulate petition for paving of Tower Ave. from 28th St. to 58th St. F. C. Tomlinson, city commissioner, promised that the city would stand back of its agreement to build the road from the Pokegama River to the city limits to meet the road to Oliver that will be paved by the county this year. Also to take up the matter of opening the 60th St. and John Ave. crossings for traffic.

Lethbridge, Alta.—City council plans paving of 13th St. subway and part of 13th St. N. A. M. Grace, City Comr.

Cap de la Madeleine, Que.—Town plans concrete sidewalks costing \$3,500. Secretary, A. Bausque, N. P.

Eastview, Ont.—Town plans concrete sidewalks, cost \$5,000. Engineers, Patterson & Byrne, Sparks St., Ottawa.

London, Ont.—Council plans to construct a 5 ft. cement walk on part of Barker St. City Clerk, S. Baker.

London, Ont.—Council plans to extend Elias St. between the eastern limit of William St. and Adelaide St. Estimated cost, \$6,294.20. S. Baker, City Clerk.

Toronto, Ont.—Board of control recommended that a concrete sidewalk be constructed on Mitchell road, north side, Niagara St. to Tecumseh St., by day labor under the supervision of commissioner of works, R. C. Harris.

Moose Jaw, Sask.—City contemplates paving of High St. West, between Fifth and Ninth Aves. City Engineer, George D. Mackie.

Winnipeg, Man.—The provincial dept. of public works plans road construction costing \$500,000. Highway Comr., A. McGillivray.

Sarnia, Ont.—A petition to pave Lochiel St. from the end of the present pavement at Victoria St. to the intersection of College Ave., will be presented to the City Council at its next meeting. City Engr., John A. Baird.

St. Catharines, Ont.—The Works Committee recommended the construction of

concrete walks on Elberta, Russell, Vale, Highland and Brighton Aves., and Main, Leeper, McDonald and Trapnell Sts.; also pavements on John, Cherry and Ontario Sts. City Engr., W. P. Near.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Des Arc, Ark.—City awarded *P. F. Conley, Little Rock Bldg., 5½ miles concrete sidewalk.

Forrest City, Ark.—*Herring & Schellhaus, Forrest City, by county, 40-mile road, Dist. No. 3.

Texarkana, Ark.—The board of directors of Miller County, Arkansas, highway and bridge district, let the contract to the *Womack Construction Co., of Sherman, for the building of 70 miles of good roads.

Nogales, Ariz.—*Montana Mines Co., Nogales, Ariz., by county, rebuilding and repaving county road from Oro Blanco at \$17,000.

Yuma, Ariz.—*O. & C. Construction Co., Yuma, by city, paving 32,000 sq. yds. bitulithic, about \$84,000.

Oakland, Cal.—City awarded to *Hutchinson Co., 13th and Franklin Sts., for improving 85th and 86th Aves.

Oxnard, Cal.—City board of trustees accepted the bid of the *Fairchild-Gillmore Wilton Co. for the paving of Magnolia from Saviers road to F St., E and D Sts. from the Magnolia Ave. to Fifth St.; F St. from the St. John's hospital corner to Fifth St.; First, Second, Third and Fourth Sts. from D to F and Fifth St. from C to E Sts., \$104,556.53.

Taveres, Fla.—*W. H. Fox Construction Co., Dortsch Ave., Nashville, Tenn., by board of county commissioners, for 20 miles road at \$59,000.

Boise, Idaho.—*Sam Porter of American Falls has been awarded the contract for 20 miles of the Idaho and Pacific highway in Power and Bannock Counties by the State highway commission. Bid was \$23,981.

Idaho Falls, Ida.—City council let for curbing and paving with gravel bitulithic of Water Ave. to *J. C. Maguire, Butte, Mont., at \$27,673.64.

Chicago, Ill.—Board of local improvements, Michael J. Faherty, Pres.; Edward J. Glackin, Secy., awarded the following contracts: *Smith & Brown Co., paving with creosoted wooden blocks on 1 in. of portland cement mortar and 6 ins. of portland cement concrete, joints filled with coal tar, surface dressed with ¼ in. of torpedo sand, the road of West Grand Ave. *Alex N. Todd, paving with vitrified paving brick on 2 ins. of sand and 6 ins. of portland cement concrete, joints filled with coal tar, surface dressed with ¼ in. of sand, the roadway of West Lake St. *Marquette Construction Co., paving with vitrified paving brick on 2 ins. of sand and 6 ins. of portland cement concrete, joints filled with coal tar, surface dressed with ¼ in. sand, the north one-half of the roadway of West North Ave. *Central Paving Co., paving with vitrified paving brick on 2 ins. of sand and 6 ins. of portland cement concrete, joints filled with coal tar, surface dressed with ¼ in. sand, the roadway of Hinsche St. to the southeasterly line of Larrabee St. to the *Ryan Co., paving with vitrified paving brick on 2 ins. of sand and 6 ins. of portland cement concrete, joints filled with coal tar, surface dressed with ¼ in. sand, the roadway of West Grand Ave.

North Chicago, Ill.—Contract for paving 10th St. was awarded by board of local improvements to *C. P. Moran, Waukegan.

Pekin, Ill.—State highway commission contract for building the state aid road in Fond du Lac township, known as section A, route 2, has been awarded to *Smith Bros. Concrete Co., of Washington, \$5,325.89.

Springfield, Ill.—State Highway Commission awarded *Cameron, Joyce & Co., of Keokuk, Ia., at \$24,464, for the building of the new Illinois state aid road, an extension of the State St. water bound macadam.

Springfield, Ill.—The following state aid contracts were awarded by the State highway commission: May 2—Lake County, Sec. C, Route 7, concrete, *C. P. Moran, Waukegan, Ill., \$21,459.72; Tazewell County, Sec. H, Route 2, concrete, *Smith Bros. Concrete Co., Washington, Ill., \$5,325.89. May 9—Adams County, Sec. C, Route 5, water bound macadam, *Cameron, Joyce & Co., Keokuk, Ia., \$24,494; Bond County, Sec. D, Route 2, brick,

*Van Deusen & Baumberger, Greenville, Ill., \$7,553.15; Clinton County, Sec. F, Route 4, concrete, *Weber & Williams Const. Co., 6249 Washington Ave., St. Louis, Mo., \$3,219.18; Fulton County, Sec. 1, Route 4, concrete, *Public Service Const. Co., Omaha, Neb., \$6,831.60; Effingham County, Sec. F, Route 1, concrete, *A. C. Loomis, Mattoon, Ill., \$5,609; Macon County, Sec. C, Route 10, oiled earth, *Wm. Amman, Decatur, Ill., \$10,332.55; Wayne County, Sec. C, Routes 3, 4, 6, 9A, 12, bridges, *Vincennes Bridge Co., Vincennes, Ind., \$5,374; Wayne County, Sec. D, Routes 1, 16, 18, bridges, *M. Frazier, Louisville, Ill., \$4,374.

Columbus, Ind.—*George F. Nugent was low bidder for a road contract in Rockcreek township, Bartholomew county, on a bid of \$13,500.

Crownpoint, Ind.—Lake county road contracts: Hanover township, *H. P. Downey, Hammond, Ind., \$9,595; Cedar Creek township, *A. H. McCoy, \$5,785.

Danville, Ind.—Hendricks county commissioners let the contract for construction of the Washington township road to *Hurst, Sweet & Co., of Coatesville, Ind., for \$20,000. No bids were received for two roads in Center township, advertised for letting at same time.

Decatur, Ind.—Following are the names of successful bidders for Adams county macadam road: *J. G. Crum, Monroe, Ind.; *David Gerber, Decatur, Ind.; *Finley Striker, Berne, Ind.; *Merryman & Fugate, Monroe, Ind.

Delphi, Ind.—*Wm. A. Irwin, of Frankfort, Ind., has the contract for a Carroll County road; cost of construction to be \$6,249.

Indianapolis, Ind.—Indianapolis board of public works let the following contracts: Cottage Ave. from Draper to State, cement walks and grading lawns to *Inland City Construction Co., at \$1.09 per ft.; Meridian from St. Clair to Tenth, wooden block, to *Republic Construction Co., at \$3.43 per ft.; First alley east of Delaware from Carson to Adler, grade and gravel, to *J. Harry Roberts, at 70 cts. per ft.

Marion, Ind.—Grant county commissioners awarded contract for a stone and tar binder road to *W. Williams, a Marion contractor, for \$15,339.

Monticello, Ind.—*G. A. Kellenburger, of Reynolds, Ind., will build a road for White county at a cost of \$16,500.

Mount Vernon, Ind.—Posey County gravel road contract was awarded to *L. J. Utley, Mt. Vernon, Ind., for \$7,777.

Muncie, Ind.—*Cady & Miller, contractors, of Winchester, Ind., have the contract for construction of a Delaware County road, \$6,150.

Salem, Ind.—*Wm. D. Davis, Salem, Ind., was the successful bidder for Washington county road contract, securing same on bid of \$4,850.

Terre Haute, Ind.—County commissioners let contract for the construction of the N. G. Wallace road, in Harrison township, Vigo county, to the *Pfizenmayer Construction Co.

Vincennes, Ind.—Knox county gravel roads were awarded to the following contractors: *Abe Hart, Sandborn, Ind.; *Henry Peden, Sandborn, Ind.; *W. L. Brocksmith, Freelandville, Ind. No bids were submitted for two roads.

Vernon, Ind.—*E. D. Kinder, of North Vernon, Ind., contract for a Jennings county stone road. Contract price is \$7,265.

Council Bluffs, Ia.—The *Bluff City Lumber & Coal Co. was the successful bidder on a quantity of lumber advertised for by the city, for the use of the streets and alleys committee.

St. Louis, Mo.—City Council opened bids for the paving of 21st St., Main St., Heights Ave., Cook St., McDonald St. from 14th St. to 16th St., and Jones St. from 21st St. to 28th St. All the paving specified was of concrete; were referred to the Street Dept. for comparison.

Hutchinson, Kan.—Board of county commissioners accepted bids of *Wheeler & Keheler of Garden City for the surfacing of 56 miles of highway with sand and clay at \$560 a mile.

Shreveport, La.—Contracts for the construction of 15 miles of model roads to cost \$45,804, were awarded by the Caddo police jury and bids for the construction of an additional six miles of the Arkansas Line road will be received by the state highway commission. Contracts awarded conclude the 1917 building program and provide for the construction of a model road between Bethany and Greenwood, 7½ miles, to *Hall Nattin

of Shreveport, for \$32,412.50; seven miles between Vivian-Lewis-Trees City, *J. B. Willis, of Greenville, Tex., for \$11,060, and the Jefferson Lake road, between The Pines and a point on the Greenwood road, six miles from Shreveport, *Gray Stinson of Shreveport for \$2,332.

Baltimore, Md.—The Paving Comm., through the Bd. of Awards, has contracted for the paving of the following alleys and small streets: Berkley St., Park Ave. to Tyson St.; College Alley, Charles St. to Park Ave.; Ivey Alley, Park Ave. to Tyson St.; Wilson Alley, Park Ave. to Tyson St.; College Alley, Saratoga St. to Pleasant St.; Little Pleasant St., Cathedral St. to Park Ave. These sections are combined in one contract, known as Paving Commission Contract No. 150, and was awarded to the *Arundel Construction Co. at their bid of \$6,184.75.

Pontiac, Mich.—County road commission decided on the work of grading and graveling 7 miles on the Franklin road in Bloomfield and Southfield townships. The contract for the grading alone was awarded to *Dan E. Hughes for \$21,057.20. The commissioners decided to take charge of the graveling themselves. The strip of road to be improved extends from the Redford road in Southfield township between sections 21 and 22 and extends to the northeast corner of section 30 of Bloomfield township.

St. Cloud, Minn.—*C. T. Welch, care Republic Creosoting Co., Minneapolis, Minn., paving: Fifth Ave. S., from 2nd to 7th Sts. Priv. plans. A. W. Buckman, City Clk. Seven or 8 blocks.

Great Falls, Mont.—Contract for the construction of a concrete pavement in Second alley north between 13th and 14th Sts. was let to *Nilson & Smith on their bid of \$1,266.51.

Jersey City, N. J.—William J. Coughlin of this city was the lowest bidder for improving Newark turnpike, which is to be widened and paved with granite block, as received by the board of freeholders, \$547,857. The bids were referred to the road committee.

Passaic, N. J.—Contractor *John T. Harrop, of Garfield, for the repairing of Paterson Ave. from the Hackensack to the Passaic River bridges, by the Bergen freeholders.

Rutherford, N. J.—Council awarded *Earle Lansdell Co. for oil to be applied on all borough macadamized streets.

Mt. Vernon, Wash.—County Commrs. for paving of Permanent Highway No. 3B with concrete: *Skagit Const. Co., Mt. Vernon, \$34,120. W. E. Costello is County Engr.

Little Falls, N. Y.—Board of public works awarded to *P. B. McCaghey for construction of a concrete sidewalk in Ward square.

Olean, N. Y.—Bids opened May 14, for 4,950 sq. yds. of brick paving, concrete foundation 5 ins. thick, 1,650 cu. yds. earth excav., H. E. Bunce, Olean, N. Y., paving per sq. yd., \$1.44; concrete base, cu. yd., \$6.50; excav., per cu. yd., 30 cts.; total, \$17,459.85. Thos. Troy, Olean, N. Y., paving per sq. yd., \$1.40; concrete base, cu. yd., \$7; excav., \$1, \$17,627.75. Chenango Const. Co., Olean, N. Y., paving per sq. yd., \$1.50, concrete base, cu. yd., \$6.74, excav., 60 cts., \$18,142.75. J. B. Hurley, Inc., Fredonia, N. Y., paving per sq. yd., \$1.40, concrete base, cu. yd., \$7, excav., 90 cts., \$19,271. E. E. Allen, City Engr.

Syracuse, N. Y.—The Warner-Quinlan Co. was the only bidder on the contract for resurfacing Wolf St. from Salina to Seventh North St. The average low figure on the various types of material was \$20,000.

Louisburg, N. C.—*R. G. Lassiter, Oxford, by town commissioners, paving 40,000 sq. yds. asphalt. Also concrete curb and gutter.

Bremen, O.—*Coshocton Const. Co., Coshocton, O., grading and paving \$21,000 Walnut St. and Purvis Ave. Engr., C. O. Brown, Court House, Lancaster. O. J. H. Downhour, Mayor.

Mt. Healthy, O.—*Meyer Hecht Const. Co., Main St., curbs and gutters; Main St. Harry Ahrens, Village Clk.

Ottawa, O.—*Geo. Hammond road improvement Hixon road. Engr., P. E. Gard, Court House. J. W. Roose, Aud., Putnam County.

Coquille, Ore.—*Hagquist & Bjorkquist, Marshfield, Ore., awarded contract for constructing the Bandon-Curry section in Coos County, at \$49,665; *E. G. Perham, the Coquille-Marshfield section, at \$80,030.

Hermiston, Ore.—See "Water Supply."

Bethlehem, Pa.—South Bethlehem Town Council decided to resurface at once with bitulithic paving the following streets: Broadway from Broadhead Ave. to Flot St., 10,000 yds.; Third St. Ave. from the Reading crossing west to Oak St., 10,000 yds.; total 20,000 yds. at \$1.60 per sq. yd., at a cost of \$32,000. East Third St. will be paved from the East Third crossing of the Reading east to the borough line with bitulithic, total of 11,200 sq. yds. at \$2.88 per sq. yd., or a total cost of \$32,256, making total of \$64,256 for both sections. The work will be done by the *Donald McNeill Co., which was awarded the contract at a recent meeting.

Butler, Pa.—Council awarded to *N. J. Boyer for the repaving of Center Ave. from McKean St. to the Bessemer tracks, at his bid of 77 cts. per cu. yd., the contractor to furnish the pitch and the sand for cushion, the borough to furnish the brick and slag.

Monessen, Pa.—*Donora Const. Co., Donora, Pa., paving and sidewalks, \$20,000. Owner, Monessen Park Land Co. J. H. Kelly, Engrs., Chaney & Armstrong, Washington, Pa.

Philadelphia, Pa.—Dept. of Public Works; Geo. E. Datesman, Director; Bureau of Highways and Street Cleaning, Wm. H. Connell, Chief, Room 232, City Hall. Bids were received May 15 on work valued at approximately \$380,000. The estimated costs of the several characters of work are as indicated: Schedule "A"—Grading, \$3,400. Schedule "B"—Paving, asphalt (assessment work), \$45,000. Schedule "D"—Paving granite block (assessment work), \$2,500. Schedule "E"—Repaving, asphalt, \$20,000. Schedule "F"—Repaving, wood block, \$8,900. Schedule "G"—Repaving, granite block, \$155,000. Schedule "H"—Surfacing, penetration macadam, \$47,500. Schedule "I"—Surfacing, bituminous pavement, \$25,000. Schedule "J"—Resurfacing, penetration macadam, \$13,000. Schedule "K"—Resurfacing, concrete pavement, \$7,500. Schedule "L"—Resurfacing, bituminous pavement, \$30,000. The bids are being scheduled and the low bidders will be known within the next few days.

Spearfish, S. D.—*S. Thompson, Spearfish, by city for building crosswalks, sidewalks, culverts during the year; sidewalks, 13c. per sq. ft.; crosswalks, 18c., and culverts, \$1 per ft.

Tottenville, S. I.—Contract for rebuilding the second section of Amboy road from Bentley St., Tottenville to New Dorp, was awarded to the *Uvalde Asphalt Paving Co. of New York. This section is from Huguenot to what is known as Little Dublin, Eltingville.

Galveston, Tex.—City Comrs. awarded contract for cement work and the placing of shell on the street ends adjoining the boulevard, from 8th to 18th Sts., to *H. J. Hetkes and *W. D. Haden. Both call for the expenditure of approximately \$7,600.

Hereford, Tex.—*Dyar & Tiefel, by county, 14.3 miles highways.

Ogden, Utah.—*P. J. Moran, Inc., 504 Felt Bldg., Salt Lake City, \$121,915, by city, paving streets in Dist. No. 125.

Ogden, Utah.—City commission approved contract with the *J. P. O'Neill Construction Co. for the paving of Butler Ave. from 25th to 26th Sts., price \$8,693.83.

Lynchburg, Va.—State highway commission received bids for the improvement of the Link road, between the Boonsboro and Forest roads with bituminous macadam, the lowest being \$26,171.60, that of S. B. Bennington. The Brookville district board immediately accepted the bid and recommended it to the state highway commission for its consideration.

Richmond, Va.—Administrative board referred to the city engineer for tabulation and report bids for grading Myrtle Ave., between Chamberlayne and Hawthorn Ave.

Richmond, Va.—Administrative board cancelled contract recently awarded to J. A. Barry & Co., for grading Brookland Park Blvd., between Moss Side and Chamberlayne Aves. The cancellation, it is explained, is due to a misunderstanding when Barry & Co. estimated on the work and offered a bid.

Clarksburg, W. Va.—*Atlantic Bitulithic Co., Richmond, Va., and *Horner & Allen, Clarksburg, paving and grading various streets, 5½ miles. Engr., G. M. Harbert. Lee Maxwell, Comr. of Harrison County.

Montesano, Wash.—Grays Harbor Co.

Comrs. for construction of two highways, Cosmopolis-North River Relocation, *Keasel & Co., Tacoma, at \$21,551; Highway No. 15, *Nels Johnson Hoquiam at \$24,715. Geo. D. Robertson, Co. Engr.

Seattle, Wash.—The *Standard Oil Co., at \$15 per ton, secured an order for 500 tons of asphalt from the Board of Public Works.

South Bend, Wash.—*Hendricks & Ward, of Chehalis, Wash., for the construction of three county highways resulted as follows: National Park Highway, Menlo-Holcomb, \$5,320; Lilly-Wheaton road, \$4,607; State road No. 20, \$6,177.

Spokane, Wash.—City Council awarded the *Warren Construction Co. for the paving and sidewalk of Main Ave. from Lincoln to Monroe, Monroe St. from the bridge to Riverside and of Riverside from Monroe to join with the paving west. Cost will be \$3,170; the engineer's estimate was \$8,500.

Wenatchee, Wash.—The Board of Co. Comrs. let a contract to *C. M. Payne of Spokane for the paving of 12,423 yds. of Permanent Highway No. 9, between here and Monitor, with one course concrete, on a bid of \$19,600.

Menasha, Wis.—Council let contract for the pavement of First, Tayco and Second Sts. to the *Rasmussen & Sons Co., of Oshkosh. The pavement will be of the sheet asphalt type, with a 5-in. concrete base, and will cover nearly a mile at a total cost of little more than \$38,000.

Superior, Wis.—County awarded contracts for highway improvements totaling \$25,000, as follows: Ashland road, Brule to Bayfield county line, *C. O. Lindquist, \$2,723.84; two sections on the Central state road to be built by *Edward Thiede at \$3,422.34, and \$1,702.13; a section of the Maple road, *C. O. Lindquist, \$2,371.25; Nowell road, Solon Springs, *Edward Thiede, \$2,725.40; Tourville road, South Range, *Holmes Bros., \$1,361.43; Chaffey bridge, Summit, \$2,100; McCreary bridge, Summit \$1,024; Pollis bridge over Brule, *Ray Johnson, \$3,081; Wyndt bridge, Brule, *Ray Johnson, \$1,830.

Sarnia, Ont.—City council awarded sidewalk contract for the year to *E. E. Pethky, and Guttridge & Grace the curb contract.

SEWERAGE.

Berkeley, Cal.—City will lay a 6-in. vit iron-stone pipe sewer to be constructed from a point in the existing sewer in the center line of Dwight Way 2 ft. westerly from the eastern line of Sacramento St., northerly parallel to the eastern line of Sacramento St. to a point 1,197 ft. northerly from the northern line of Dwight Way. A. G. Briggs, City Clerk.

Rock Island, Ill.—This city and Moline decided to share expense on the 46th St. storm drain controversy; will cost about \$30,000.

Lafayette, Ind.—Bids received June 12, 1917, at 2 p. m., by city controller, for sale \$10,375 sewer bonds, 4 per cent., six years. W. Murdock, City Controller.

South Bend, Ind.—Board of public works plans to construct a local sewer on Clover St. from the St. Joseph River to Mishawaka Ave.

Davenport, Ia.—According to statement of Commissioner of Public Works John W. Crowley, all the contemplated sewer improvements will cost the city approximately \$100,000. The Rock Island St. and Valley St. drains will amt. to practically \$80,000, and the Oak St. opening will cost the city about \$17,000.

Sioux City, Ia.—City Council deferred until June 2 a resolution declaring the advisability and necessity of constructing a sanitary sewer in West 17th St., between West St. and a point opposite the east line of lot 4 in block 4, of Coe addition.

Sioux City, Ia.—City Council deferred action of one week on the resolution for the construction of an 8-in. sanitary sewer in West Morningside; also the construction of a sanitary sewer in Nebraska St., between 23rd and 34th Sts., and advertising for bids.

Sioux City, Ia.—A resolution ordering the construction of a sanitary sewer on Nebraska St. from 33d to 24th St. was deferred for one week.

Sioux City, Ia.—Resolutions ordering the construction of storm water sewers on Nebraska St. from 32d St. to 34th St.,

and on Pearl St. from Seventh St. to Perry Creek were passed.

Sioux City, Ia.—Bids were asked for the construction of sanitary sewer on South St. Mary's St. from Fourth Ave. to Third Ave., and on Third Ave. from South St. Mary's St. to South Cornelia St.

Louisville, Ky.—Bids for installing sewers in Pennsylvania and Field Aves. and Crescent Hill were rejected by the board of public works; will readvertise.

Fitchburg, Mass.—Council orders sewers in Hobson and Canton Sts. and Oak Hill Rd.

Jackson, Mich.—See "Streets and Roads."

Pontiac, Mich.—Engineer Barnett was directed to prepare plans, profile and estimate of the cost of a sanitary sewer in Chamberlain St. from Sheridan to Perry.

Duluth, Minn.—Council ordered water and gas mains in Superior St. from 31st Ave. east to a point 250 ft. east of 31st Ave.; in 63d Ave. west, from Nicollet to Roosevelt St.; in Roosevelt St. from 62d to 63d Ave. west, and in 62d Ave. west from 50 ft. south of Roosevelt St. to a point 200 ft. north of Roosevelt St.

Duluth, Minn.—Council ordered following sewers in 7th Alley, from 23d to 24th Ave. west, estimated cost \$760; in Calvary Rd. from Rendle to Woodland Ave., and in Calvary Alley, \$1,843, and in 8th St. from 40th to 41st Ave. west, \$521.

Duluth, Minn.—City appropriated \$479.60 for the construction of storm and sanitary sewer. C. R. Magney, Mayor.

Leland, Miss.—John Nuveen & Co., Chicago, were the successful bidder, at \$40,000, for sewer bonds. J. H. O'Quinn, Town Clerk.

Mexico, Mo.—Black & Veatch, engrs., 507 Interstate Bldg., Kansas City, preparing plans for sewer improvement for this city.

Poplar, Mont.—See "Water Supply."

Amsterdam, N. Y.—In order that every detail in connection with the new Guy Park Ave. pavement shall be carried out the public works department was instructed to build two catch basins and put in about 100 ft. of storm sewer at the intersection of Guy Park Ave. and West Main St.

Amsterdam, N. Y.—See "Streets and Roads."

Brooklyn, N. Y.—Contracts for 13 sewer jobs will be let within a few weeks by Borough President Connolly. All of the work will be completed by the end of the summer. The total cost of the improvements, according to the lowest bids just compiled, will amount to \$109,608.76. Most of the work will be done in the Woodhaven section.

Newtown, N. Y.—Newtown local board approved the following petitions for local improvements. Sewer and appurtenances in Greenpoint Ave., from Queens Blvd. to Hancock St., First and Second Wards. Regulating and paving together, in Summerfield St., from Wyck-off Ave. to Myrtle Ave., Second Ward. Regulating, grading, curbing and paving in Catalpa Ave., from Fresh Pond road to Fremont St., Second Ward. Regulating, grading and laying gutters in Mary St., from Baltic St. to Flint Ave., Second Ward. Sewer and appurtenances in Seventh Ave., from Washington Ave. to Graham Ave., and in Pierce Ave. from Fourth Ave. to Eighth Ave., and Ninth Ave. to Steinway place, First Ward.

Watertown, N. Y.—Plans for the proposed Morrison St. sewer were approved and ordered submitted to the state board of health. The common council was asked to provide \$30 for the necessary surveys.

Bowling Green, O.—Resolutions approved to construct a lateral sanitary sewer with the necessary manholes and catch basins as follows: Commencing at a point 131 ft. north and 90 ft. west of the southeast corner of Outlot 81, thence west to Case Ave., thence north along Case Ave. to Merry Ave., thence west along Merry Ave. to Thurston Ditch. Also lateral sewer beginning 131 ft. north and 40 ft. east of the southwest corner of Outlot No. 75, thence east to Case Ave. and there terminate, in the city.

Columbus, O.—Council referred ordinance for construction of a sewer in Kelton Ave., from Main St. to the alley south, etc., to public service committee. George J. Karb, Mayor.

Hamilton, O.—Sanitary sewer construction was authorized in portions of Hanover St., Irma, Corliss, Howell, Mosler and Harmon Aves.

Commerce, Okla.—Citizens will vote in the near future on the question of issuing \$35,000 sewer bonds.

Carlisle, Pa.—The ordinance committee was directed to prepare an ordinance to extend the sanitary sewer on West Locust Alley from Pitt westward, about 200 ft.

Elmhurst, Pa.—See "Water Supply."

Hazleton, Pa.—Council passed ordinance appropriating \$1,850 for erection of Green St. sewer.

Kittanning, Pa.—City plans to build intercepting sewer and sewage treatment works.

Woonsocket, R. I.—Ordinance providing for the construction of sewers in Paradis Ave. from Bennett St. to Welles St. Passed and ordered communicated.

Woonsocket, R. I.—Ordinance providing for the construction of sewers in Meadow Rd. from Woodland Rd. to Harris Ave., and in Harris Ave. from Lyman St. to Winter St., and in Kindergarten St. from Harris Ave. to Blackstone St., and in Varry St. from Harris Ave. to River St. Passed.

Graham, Tex.—Henry Exall Elrod, Engineer, Interurban Bldg., Dallas, Tex., will design and supervise the construction of a sewer system and sanitary disposal plant for the city, to cost \$25,000.

McAllen, Tex.—Taxpayers voted in favor of issuing \$30,000 sewer bonds.

Ogden, Utah.—City Comm. instructed the City Engr., Joseph M. Tracy, to prepare the necessary plans and specifications for sewer district 135 of Washington Ave. from 33d to 36th St. and Riverdale Rd., between Washington Ave. and 36th St.

Richmond, Va.—City Engr. Bolling has been instructed by the administrative board to advertise for bids for extending a sewer to buildings in North Richmond Terrace.

Oakdale, Wash.—Bonds to build a sewer and septic tank was defeated.

Cheyenne, Wyo.—Mayor LaFontaine, City Clerk Showalter, City Attorney J. D. Clark and City Engineer Glafcke have been designated by the city council to make arrangements for the issuance of bonds to the amount of \$60,000 to provide storm sewers. After the matter is referred to the people for a vote bids for the construction will be advertised.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Los Angeles, Cal.—Board of Public Works to *Andrew Jayich at \$269, vit. sanitary sewer, Woodland Ave. Horace B. Ferris, Secy.

Danbury, Conn.—Contractor Luke F. Sweeney was the only bidder for the construction of the Cleveland St. and South St. sewers and the Bank St. drain at \$2,751.10.

Tennille, Ga.—City awarded *J. P. Carter, Decatur, for constructing 4 miles sanitary sewers, hauling and laying 3,600 ft. 6 and 8-in. water mains and 2-in. service pipe; about \$10,000.

Champaign, Ill.—*Arthur Birt, E. Main St., Decatur, Ill., for sanitary sewer in Garwood district by Board of Local Improvements. E. S. Swigart, Mayor; Nat Woodward, Clk.; Fred Lohman, City Engr.

South Bend, Ind.—Contract for the trunk sewer on Portage Ave. was awarded to *Hoban & Rouch, local contractors, by board of public works. The sewer will be built of Natco segment block and will have a diameter of 60 ins. Price is \$59,970. The trunk sewer system for High St. and Ewing Ave. to *L. H. Webster Co. The construction will be of vitrified pipe. Price is \$29,604.

Sioux City, Ia.—*W. B. Carter by city on the construction of a storm water sewer in 32nd St., between Jones and Jennings Sts. and in 15th St., between Main and McDonald Sts.

Sioux City, Ia.—City Council awarded *Jenson & Krage for the paving of 21st and West 21st, McDonald and Cook Sts. and Heights Ave. Twenty-first St. is to be paved from McDonald to Cook; Cook from West 21st to Heights and McDonald from 14th to 16th.

Minn., Cokato.—*Tittrud Bros., local, bid low for bldg. sewers at \$6,450. G. A. Stenson, Clk.

Baltimore, Md.—Board of Awards has placed contracts for connecting certain properties with the sanitary sewer system with the following companies: *E. J. McCarthy, *American Plumbing and Tinning Co., *George F. Henbeck, Jr., and *Louie E. Myers.

Boston, Mass.—Mayor approved contract May 10 with John W. O'Connell at \$4,830.25 for building sewerage works, pipe sewers and drain in Berkeley St., from Columbus Ave. to Boston & Albany R. R. Bids opened May 4. Also with *West Roxbury Trap Rock Co. at \$11,236, for building sewerage works, Spring St. Brook Conduit, in private land; Landseer St. and La Grange St., and Landseer St. between Centre and La Grange Sts., West Roxbury. Bids opened May 2.

Petokey, Mich.—Contract for furnishing material and constructing sanitary sewer in Stuart Ave., Rosedale, *J. K. Smith, this city.

Virginia, Minn.—*Risberg & Marwick of Virginia have been awarded the contract for laying an 8-in. storm sewer from the gas plant to the city's main sewer, let by the water and light commission, for \$1,412.40. C. Christopherson was the other bidder.

Higginsville, Mo.—*O'Neil Construction Co., Leavenworth, Kan., at \$30,626, by city, installing sewers.

Scotts, N. J.—*Edgar Ellis, 737 Brandwine Ave., Schenectady, at \$7,064, service and sanitary sewers, Sacandoga Rd. E. Crosby, Village Clerk.

Syracuse, N. Y.—Board of Contract & Supply for the construction of a new sewer in South Salina St., between Onondaga and Adams St., *A. F. Sposato, \$4,005.25.

Fargo, N. D.—*Alken Constr. Co., 215 10th St., lateral sewers, \$1,159. Second St., from 5th to 6th Ave. and 5th Ave. N. from 12th St. to alley, 134 blk. vit. tile. A. R. Watkins, Aud. Cass County.

Partherton, O.—City awarded *Hoag & Kall, 510 Commercial Bank Bldg., Cleveland, 5 mi. sanitary sewers, and pumping station, \$123,573.

Lancaster, O.—*Wm. Stracham, for about 2 1/4 miles 8 to 36-in. sanitary sewer in District 12 by department of public service. Geo. B. Larimer, Dir.; Ernest Rowles, Aud.; Julian Griggs, City Engr.

Harrisburg, Pa.—*Stueker Bros., Russ Bldg., sewer, Dunkle St., 10 ft. t. c. pipe. W. H. Lynch, Supt. of Streets.

Hazleton, Pa.—Council awarded contract for the erection of the Green St. sewer to *Arlo Ruth at \$1,826.40.

Upper Darby, Pa.—*C. J. Lawler, Bala, and *Gibbons & Huckley, Lansdowne, by commissioners, 5 miles terra cotta sewers.

Aberdeen, S. D.—City commissioners awarded *Nick Burchard sewer construction in sewer district No. 123.

Houston, Tex.—City council awarded contract to build the Fulton St. storm sewer to *A. A. Garvin and an appropriation of \$4,000 made to pay for the work.

Bellingham, Wash.—Council awarded contract for construction of the Ellis-Mason Sts. trunk sewer to *Riddle & Hawkins, local, for \$3,621.

Madison, Wis.—City awarded *E. R. Harding Constr. Co., Racine, installing sewers, \$300,000.

Manston, Wis.—See "Water Supply."
Milwaukee, Wis.—*Geo. E. Zimmerman, 3102 McKinley Bldg., sewer, Wallis Pkwy & Grand Ave. Engr., H. J. Kehling, care F. O. Phelps, Clk., Milwaukee County.

New Glarus, Wis.—*Kenith Kerrity, 5038 Sunnyside Ave., Chicago, sewer. Engr., W. W. Kirchoffer, 31 Vroman Bldg., Madison, Wis. E. J. Horsly, Bil. Clk., New Glarus.

WATER SUPPLY.

Palatka, Fla.—A bill has been introduced in the Legislature which provides for the issuance of \$60,000 water bonds.

Joliet, Ill.—City ordered bids for water main in Third Ave. at an estimated cost of \$1,032.02 and in Wilson St., at an estimated cost of \$1,368.24.

Tamlico, Ill.—Village authorized a \$6,000 bond issue to make extensions to the water works.

Ia., Boone.—Bids will be advertised for extension of water mains.

Kingsley, Ia.—Messrs. Schanke & Co., Mason City, purchased the \$3,500 water works bonds.

Biddeford, Me.—City Council will make appropriations for the installing of 10 hydrants on the Pool road to begin at the terminus of the present water system on the road.

Jackson, Mich.—See "Streets & Roads."
Union, Mo.—City plans to issue bonds for water works construction.

Great Falls, Mont.—An extension of the water main on First Ave. north was ordered as from 25th to 27th Sts.

Poplar, Mont.—Matter of having a waterworks and sewage system installed has been taken up by the local Chamber of Commerce. Council will be asked to take action.

Willsall, Mont.—City considering installing water works system.

Roxers, Neb.—A water works system including tower will be constructed by the town.

Stamford, Neb.—City defeated bonds to install water system.

Amsterdam, N. Y.—See "Streets and Roads."

Amsterdam, N. Y.—Department of public works authorized to construct a 6-in. water main on Law Pl. in the 8th Ward, and a similar one on Stewart St. from Elmwood Pl. to connect with the present main on that thoroughfare.

Watertown, N. Y.—Board of Water Works was authorized by the Common Council to expend \$50,000 for the installation of an addition to the present water purifying plant. The plans include the construction of a dam at the head of the old settling basin and the addition of new filter beds and aerating pump which will about double the capacity of the plant. The work will be started at once.

Yonkers, N. Y.—City Engr. Fulton, submitting specifications for the trenching and refilling of trenches, including the carting of pipes and specials for a water main in Scott Ave., from the Bronx River Rd. to Kimball Ave. for the trenching and refilling of trenches for a water main in Upland Ave. and Lewis St., and Alder St.

Canton, O.—Council Committee of the whole endorsed and decided to carry out the recommendations made by Engr. Chas. B. Burdick, of Chicago, for the improving of the pumping system for the Union Dam and Navarre Road wells in the southwest end of the city. The improvements will consist of the installation of low lift pumps and the connecting by a main of the two groups of wells. The councilmen voted to have the waterworks department proceed at once with the improvements. The money needed, estimated at about \$15,000, will be taken from an \$80,000 appropriation originally intended for the more expensive pumping system which has been rejected. The expenditure of \$15,000 is expected to double the production of the southwest district wells which now produce about 10,000,000 gals. daily.

Chardon, O.—Voted to install water works.

Columbus, O.—Council approved ordinance for additional appropriation of \$1,000 to the fund to be used for the purchase of a one-ton truck in the division of water, and known as Waterworks 90-700 Fund, and authorizing the Board of Purchase to advertise for bids. Jas. J. Thomas, City Clerk.

East Palestine, O.—Messrs. J. C. Mayer & Co., Cincinnati, purchased the \$20,000 water works improvement bonds.

Greenville, O.—City passed bond issue for erection of a new water plant.

Louisville, O.—Village Clerk Dallas Allison, receiving bids June 16, purchase of bonds in the aggregate sum of \$6,000, issued for the purpose of purchasing pumps, necessary equipment and extension for the waterworks plant.

Toledo, O.—City will shortly let contract for Broadway pumping station; cost, \$30,000 to \$60,000. H. McClune, City Engr.

Wooster, O.—W. J. Sherman Engrs. Co., Engr., 613 Nasby Bldg., Toledo, preparing plans for new water system for the city.

Madill, Okla.—Voters defeated the water works bond issue.

Elmhurst, Pa.—Citizens organized a board of trade and will endeavor to get a water and sewage system, an electric light plant, the extension of the Moosic Lake trolley line into the borough, overhead railroad crossing and better railroad facilities generally.

Monaca, Pa.—Voters defeated the question of issuing \$25,000 for water improvements.

Enosburg, Vt.—Will vote at an early date the question of a water supply.

Franklin, Va.—Town plans to install filter plant, cost \$17,000.



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St. Johns, Wash.—Bonds in the sum of \$16,000 were voted for a water system here.

Racine, Wis.—City has issued bonds toward the purchase of the Racine water plant.

Laramie, Wyo.—City Clk. F. G. Coolican receiving bids May 22 \$60,000 water works bonds.

Chatham, Ont.—Ontario Railway and Municipal Board approved by-law authorizing \$16,000 bonds for water works extension. J. W. Adams, City Engr.

Delta, B. C.—A new reservoir is to be installed at the water works. Clerk, M. A. McDiarmid.

Winnipeg, Man.—City council plans purchase of water meters. City Engineer, W. P. Brereton, 223 James Ave.

Pointe Claire, Que.—A report on a proposed filtration plant has been made to R. S. and W. S. Lea, Montreal. At present a chlorinator is being installed.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Tennille, Ga.—See "Sewerage."

Boston, Mass.—Contracts approved by the Mayor May 7: *D. Vozzella, \$1,485.10, for laying water pipes in Cornell St., between Colberg Ave. and Westbourne St., West Roxbury Pkwy., between Colberg Ave. and Newberg St., West Roxbury. *Hugh McNulty, at \$5,202.65, for laying water pipes in East River St., between Huntington and Fairmount Ave., Hyde Park. Bids opened Apr. 27.

Boston, Mass.—Water Dept. of Public Works awarded *John Gwarino & Son, at \$4,334, for laying water pipes in Washington St., from Hollis St. to Bway; Bway, from Washington St. to Harrison Ave.; Hartford St., from High St. to Wendell St.; Franklin St., from Broad St. to Oliver St. Bids opened Apr. 27.

Duluth, Minn.—Council awarded *Leonard Hedberg the contract to lay gas and water mains in 10th St. from 2d Ave. west to 1st Ave. east, on his bid of \$1,444.60.

Manaquan, N. J.—*John F. McGreavey for the extension of water main.

Fargo, N. D.—City awarded *Schruth & Jackson, Fargo, water mains in portions 6th, 7th, 8th, 9th, 15th and 16th Sts.; \$45,000.

Columbus, O.—Board of Purchase awarded the *Scioto Valley Supply Co., boiler tubes for the division of water 4x18, \$12.05 each; 3½x18, \$9.70 each.

St. Marys, O.—Contracts, approximating \$47,000, for the construction of the municipal light and water works plant

and distribution system, including ornamental street lamps, were awarded by the Board of Control to the *Skeldon Engineering Co. and the *National Supply Co., Toledo, and *Charles I. Zahm, Detroit.

Hermiston, Ore.—The *Newport Construction Co. secured the contract for a big dam and reservoir and will also do some grading on the Prineville road.

Ringtown, Pa.—Borough let contract reinforced concrete reservoir and 6 to 8-in. water mains, to *Kelly Eng. Co., Buffalo, \$12,000.

Manston, Wis.—City awarded *De Los Engr. and Construction Co., Prairie du Chien, for building reservoir and installing sewers.

York Twp., Ont.—For laying the principal mains in the southern portion of the township in connection with the new water works system. The following contracts have been let: The *Dominion Construction Co., Ltd., Toronto, Eglinton Ave., from Duplex Ave. to Dufferin St., at \$31,723.70, and Jane St., west St. Clair Ave., Baby Point, and Windermere Ave., at \$11,288.20. To *Mitchell & Nolan, London, Weston road, at \$8-805.24, and Oakwood Ave. and Vaughan, at \$12,317.24.

MISCELLANEOUS.

Washington, D. C.—Navy Dept. supplies, No. 4461.—Sealed proposals will be received at the Bureau of Supplies & Accounts, Navy Dept., Washington, D. C., to which bureau firms desiring to submit bids should apply, giving schedule numbers for furnishing the following: Schedule 1119, wire fabric; Schedule 1133, centrifugal horizontal pumps, and plunger type pumps; Schedule 1138, 2,500 lbs. single frame steam hammer; Schedule 1139, oxygen and hydrogen electrolytic generators; Schedule 1147, Trinidad paving asphalt; Schedule 1155, red building brick, fire clay, broken limestone, molding sand, carborundum sand, and white beach sand; Schedule 1156, storage battery, mechanical, and common mercurial thermometers; Schedule 1159, motor lathes, horizontal and vertical milling duplex machines, engraving machines, universal milling machines, universal double over-arm milling machine, heavy type vertical-spindle milling machine, medium type vertical-spindle milling machine, radial-drill universal half presses, and motor-driven, pillar-crank, back-gear shapers.

Ogden, Ill.—New village board decided

to oil the streets of the town this spring. A carload of probably 6,000 gallons of oil will be ordered.

Bedford City, Ind.—City park bonds, \$6,500 issue, were sold to the Citizens' Trust Co., of Bedford, Ind., at a premium of \$100.

Kokomo, Ind.—Council appropriated money for the automobile for the weights and measures inspector.

Marion, Ind.—Grant County Comara. will sell May 26 one 10-ton Monarch steam roller in good repair; also for sale, junk graders, drags, scoops, etc. Mort McRae, Aud. Grant County.

Portland, Ind.—Bids received June 18, 1917, at 10 a. m., by Auditor of Jay County, for sale, \$100,000 temporary loan, 6 per cent, two years. John Bonifas, Aud.

Rensselaer, Ind.—Bids received May 31, 1917, at 1 p. m., by Auditor of Jasper County, for sale \$21,402.10 and \$9-335.29 ditch bonds, 5 per cent, ten years. Joseph P. Hammond, Auditor.

Shelbyville, Ind.—Council adopted resolutions for oiling of West St. from Colescott to South, and Washington from Tompkins to Maple.

Denison, Ia.—Citizens voted in favor of issuing \$20,000 improvement bonds.

Sioux City, Ia.—O. D. Arp, supt. of the city's parks, in his annual report to Councilman Lewis, head of the Park Department, recommends that comfort stations be erected in all of the public parks at present without them.

Great Bend, Kan.—Plainville Twp. in Rooks County decided in favor of issuing \$60,000 bonds to assist in the building of the Gulf-Plainville & Northern R. R.

Henderson, Ky.—Henderson County purchased road tractor. The court will purchase another tractor and two large road graders after other road working machinery is tested by the county engineer.

Boston, Mass.—Council unanimously approved an order from the mayor appropriating \$200,000 for the purchase of the Pemberton Square police headquarters property, which the city had held on a lease for 15 years.

Boston, Mass.—Council passed a \$35,000 loan order for a new East Boston fire house and a \$3,500 order for Marine Park improvements. It approved the appropriation of \$1,317 additional for the Boston Common convenience station.

Brockton, Mass.—An order appropriating \$1,500 for the purchase of land on Thatcher St. involving some fine acres, for the extension of the city farm, was referred to the finance committee.

Jackson, Mich.—See "Streets & Roads."

TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS.				
Mass., Boston	noon, May 25	Concrete walk and granite stairway	Park and Recreation Dept.
Mass., Boston	noon, May 25	200,000 gals. 45% road oil	Patrick O'Hearn, Acting Supt. Supplies.
Cal., Los Angeles	10 a.m., May 28	Paving and sidewalk construction	Board of Pub. Works.
Ore., McMinnville	10 a.m., May 29	Grading and paving 1 to 3 miles	Herbt. Nunn, State Hwy. Engr.
Mass., Boston	noon, May 29	Sheet asphalt, Topeka or bitulithic paving, 5 streets	E. F. Murphy, Comr. Pub. Wks.
Mass., Boston	noon, June 1	Bitulithic pavement on Commonwealth Ave.	Park and Recreation Dept.
Wis., Green Bay	June 1	Asphalt paving and bridge approaches	M. Kerr, City Clerk.
W. Va., New Cumberland	June 2	12 miles of concrete or brick road	C. E. Grafton, Engr.
Ind., Kokomo	June 4	Combined curb and walk; oiling streets	Board of Pub. Works.
Minn., St. Paul	10:30 a.m., June 4	Grading and curbing streets	H. W. Austin, Pur. Agent.
Ind., Paoli	2 p.m., June 4	Constructing 2 roads	P. M. Stephenson, Co. Audr.
Ind., Franklin	2 p.m., June 4	5,515 ft. of gravel road	J. C. Gregg, Co. Audr.
Ind., Mt. Vernon	2 p.m., June 5	13,321 ft. of gravel road	J. R. Haines, Co. Audr.
Ind., Delphi	1:30 p.m., June 5	Gravel or macadam road	H. D. Good, Co. Audr.
Ind., Indianapolis	10 a.m., June 6	Paving and sidewalks	B. J. T. Jeup, City Engr.
SEWERAGE.				
Mass., Boston	noon, May 25	Pipe sewers and drains in Brighton	E. F. Murphy, Comr. Pub. Wks.
Ind., Kokomo	May 28	10-in. tile sewer	Board of Pub. Works.
Pa., Harrisburg	noon, May 29	Sewers in several highways	W. H. Lynch, Supt. streets and Pub. Impts.
N. Y., Fort Totten	11 a.m., June 2	Sewage treatment works	Quartermaster.
Cal., Los Angeles	10 a.m., June 4	Temporary outfall sewer	City Engineer.
N. J., Atlantic City	11 a.m., June 13	Septic tank and sewer line, at hospital	S. H. Vaughn, Architect, Guaranty Trust Bldg.
WATER SUPPLY.				
Mass., Boston	noon, May 28	1,000 post hydrant boxes and 500 gate boxes	Patrick O'Hearn, Acting Supt. of Supplies.
Minn., St. Paul	10:30 a.m., June 4	Excavating water trench, 30 ins. wide and 8 ft. deep	H. W. Austin, Pur. Agent.
N. Y., New York	2 p.m., June 4	Furnishing and laying water mains in Brooklyn	Room 2351, Municipal Bldg.
MISCELLANEOUS.				
N. Y., New York	noon, June 1	10,000 gals. marine engine oil	R. A. C. Smith, Comr. of Docks.

Notice to Contractors

Sealed proposals will be received at the office of the undersigned, in the City of Johnson City, Tennessee, until 7:30 P. M., June 5, 1917, for constructing sewers according to plans and specifications on file in the office of the City Engineer.

Approximate Quantities

THIRD WARD SEWER

1,459 feet 15-inch vitrified pipe sewer;
765 feet 12-inch vitrified pipe sewer;
144 feet 10-inch cast iron pipe sewer;
642 feet 10-inch vitrified pipe sewer;
779 feet 8-inch vitrified pipe sewer;
15 manholes.

Approximate Quantities

BRUSH CREEK SEWER

3,802 feet 15-inch vitrified pipe sewer;
48 feet 15-inch cast iron pipe sewer;
8 manholes.

Each bid must be accompanied by a certified check equal to five per cent. of the amount of the bid as a guarantee of the good faith of the bidder.

Bids are asked for payable in cash or bonds at the option of the City.

Bids will be received for the construction of each sewer separately, and also for the furnishing of the material for each sewer separately.

The right is reserved to reject any or all bids.

Bids will be opened at a regular meeting of the City Council, Tuesday, June 5, 1917, at 7:30 P. M.

P. F. McDONALD,

City Commissioner and Engineer.

WM. E. HATCHER,

Recorder.

PROPOSALS FOR STREET PAVING.

Sealed proposals will be received at the office of the undersigned, in the City of Johnson City, Tenn., until 7:30 p. m., Tuesday, June 5, 1917, for constructing street paving with asphalt, asphaltic concrete, cement concrete or tarvia for Improvement Districts No. 20, No. 21, No. 23, according to plans and specifications in the Office of the City Engineer. The City reserves the right to award separate contracts for each paving district and to award curb and gutter or sewer separate from paving, and to reject any or all bids.

APPROXIMATE QUANTITIES.

District No. 21—W. Market St.

6,217 sq. yds. paving, including grading.
4,418 lin. ft. curb and gutter, including grading.
1,220 lin. ft. 12-in. vit. sewer.
1,805 lin. ft. 10-in. vit. sewer.
2,448 lin. ft. 6-in. vit. sewer.
5 manholes.
1 reinforced concrete bridge.

District No. 20—Pine St.

8,842 sq. yds. paving, including grading.
5,114 lin. ft. curb and gutter.
1,668 ft. 8-in. vit. sewer.
1,613 ft. 6-in. vit. sewer.
4 manholes.

District No. 23—Roan St.

9,978 sq. yds. paving, including grading.
5,965 lin. ft. curb and gutter, including grading.
2,393 lin. ft. 8-in. vit. sewer.
1,740 lin. ft. 6-in. vit. sewer.
8 manholes.
30 ft. 12-in. storm sewer.
5 catch basins.

170 ft. 18-in. storm sewer.

40 ft. 24-in. storm sewer.

Each bid must be accompanied by a certified check equal to 10 per cent. of the amount of bid as a guarantee of good faith of the bidder. Payment for work to be made in 5½ per cent bonds.

Bids will be opened at regular meeting of Board of Mayor and Aldermen, 7:30 p. m., Tuesday, June 5, 1917.

P. F. McDONALD,

City Engineer.

WM. E. HATCHER,

Recorder.

Proposal adv. continued on page 37.

OFFICIAL ADVERTISING

"Reaches Most Bidders at the Least Cost"

Rate \$2 an inch. Copy reaching us by 10 a. m.
Thursday will go in issue mailed that night.

HIGHWAY WORK

Office of The State Commission
of Highways, Albany, N. Y.

Sealed proposals will be received by the undersigned at their office, No. 55 Lancaster street, Albany, N. Y., at one o'clock p. m., on Monday, May 28th, 1917, for the repair of highways in the following counties:

ALBANY (two contracts—reconstruction and resurfacing).

CAYUGA (one contract—resurfacing).

COLUMBIA (one contract—reconstruction).

ESSEX (one contract—resurfacing).

GREENE (two contracts—surface treatment and reconstruction).

HERKIMER (one contract—surface treatment).

JEFFERSON (one contract—resurfacing).

NIAGARA (one contract—resurfacing).

ONTARIO (one contract—resurfacing).

ORLEANS (one contract—resurfacing).

OTSEGO (one contract—reconstruction).

RENSSELAER (one contract—surface treatment).

SARATOGA (one contract—resurfacing).

SENECA (one contract—resurfacing).

SUFFOLK (two contracts—surface treatment and resurfacing).

ULSTER (one contract—resurfacing).

WASHINGTON (two contracts—resurfacing and surface treatment).

WESTCHESTER (one contract—reconstruction).

Also for the improvement of highways in the following counties:

COLUMBIA (approx. 7.77).

JEFFERSON (approx. 0.66).

Maps, plans, specifications and estimates may be seen and proposal forms obtained at the office of the Commission in Albany, N. Y., and also at the office of the Division Engineers in whose division the roads are to be improved. The addresses of the Division Engineers and the counties in which they are in charge will be furnished on request.

The especial attention of bidders is called to "General Information for Bidders" on the itemized proposal, specifications and contract agreement.

I. J. MORRIS,
Secretary.

EDWIN DUFFEY,
Commissioner.

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Additional Proposal Advertisements on Page 40

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600 pcs. 12-ft. Weimlinger 12"x7½ lbs.
345 pcs. 16-ft. Lackawanna 7"x¼"
363 pcs. 20-ft. United States 12¼"x¾"
585 pcs. 20-ft. United States 12"x¾"
125 pcs. 35-ft. Lackawanna 4"x¾"

All first-class driving condition. We have a large stock of all makes, in various lengths. What do you need?

CARS, LOCOS, EQUIPMENT, etc.



TREASURY DEPARTMENT, Supervising Architect's Office, Washington, D. C., May 19, 1917.—Sealed proposals will be opened in this office at 3 P. M., June 15, 1917, for the construction of the United States Post Office at Chapel Hill, N. C. Drawings and specifications may be obtained from the Custodian of the Site at Chapel Hill, N. C., or at this office, in the discretion of the Acting Supervising Architect. JAS. A. WETMORE, Acting Supervising Architect.

TREASURY DEPARTMENT, Supervising Architect's Office, Washington, D. C., May 10, 1917.—SEALED PROPOSALS will be received at this office until 3 P. M., June 11, 1917, and then opened for remodeling the U. S. Post Office, Bridgeport, Conn., in accordance with the drawings and specifications, copies of which may be had at this office or at the office of the Custodian in the discretion of the Supervising Architect. JAS. A. WETMORE, Acting Supervising Architect.

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Proposals for Pump

Sealed proposals will be received by the City Council of the City of Titusville, Pa., until 7 o'clock P. M. of June 4, 1917, for furnishing and installing at City Water Works one 3,000,000-gallon pump, driven by gas or oil engine power.

Specifications will be furnished by Karl R. Kightlinger, City Engineer.

Bids must be accompanied by bond with two approved sureties or surety company bond in the sum of \$2,000, conditioned to enter into contract. Further bond for faithful performance. The right to reject any or all bids is reserved.

W. M. DAME,
City Clerk.

BUYERS' CLASSIFIED DIRECTORY

of Names and Addresses of Firms from Whom to Buy Materials Appliances and Machinery Needed by Municipal Departments and Contractors

Cement

Allentown Portland Cement Co., Allentown, Pa.
Atlas Portland Cement Co., 30 Broad St., N. Y.
Lehigh Portland Cement Co., Allentown, Pa.

Contractors' Equipment

(See Paving Machinery also.)

AIR COMPRESSING PLANTS (Portable).
*Gardner Governor Co., Quincy, Ill.

AIR DIFFUSING FILTERS PLATES.

*General Filtration Co., Cutler Bldg., Rochester, N. Y.

DUMPING BUCKETS.

Stuebner, G. L., Iron Works, Hancock St., Long Island City.

MOTOR TRUCKS, DUMPING.

*Duplex Truck Co., Lansing, Mich.
*General Vehicle Co., Long Island City, N. Y.
*Kissel Motor Car Co., 570 Kissel Ave., Hartford, Wis.
*White Co., Cleveland, Ohio.

PUMPS, DIAPHRAGM.

*Parker, A. A., Watford, N. Y.

WAGONS.

*Eagle Wagon Works, Auburn, N. Y.

Drawing Materials

BLUE PRINTS AND PAPER.

New York Blue Print Paper Co., 58 Reade St., New York.

Fire Dept. Equipment

AERIAL TRUCKS.

*Boyd, James & Bro., 25th and Wharton Sts., Philadelphia, Pa.

COMBINATION CHEMICAL AND HOSE WAGONS.

*American-La France F. E. Co., Elmira, N. Y.
*Boyd, James & Bro., 25th and Wharton Sts., Philadelphia, Pa.
*Kissel Motor Car Co., 570 Kissel Ave., Hartford, Wis.

FIRE ALARM SYSTEMS.

*Loper Fire Alarm Co., Stonington, Conn.

FIRE ALARM TELEGRAPH.

*Gamewell Fire Alarm Telegraph Co., Grand Central Terminal, N. Y.

FIRE HOSE.

*Eureka Fire Hose Co., 27 Barclay St., N. Y.
*Fabric Fire Hose Co., Duane & Church Sts., New York.

GASOLINE STORAGE SYSTEMS.

*Bowser, S. F. & Co., Inc., Fort Wayne, Ind.

PUMPING ENGINES, GASOLINE.

*American-La France F. E. Co., Elmira, N. Y.

RUBBER TIRES.

*Goodyear Tire & Rubber Co., Akron, O.
*U. S. Tire Co., Broadway & 58th St., New York.

TRACTORS.

*Couple Gear Freight Wheel Co., Grand Rapids, Mich.

TRIPLE COMBINATION MOTOR.

*American-La France F. E. Co., Elmira, N. Y.

Paving Machinery

ASPHALT PLANTS.

*Cummer & Son Co., F. D., Cleveland, O.
*East Iron & Machine Co., Lima, O.
*Hetherington & Berner, Indianapolis, Ind.
*Warren Bros. Co., Boston, Mass.

BRICK CONVEYERS.

*Mathews Gravity Carrier Co., Elwood City, Pa.

BRICK TESTING MACHINES.

*Hetherington & Berner, Indianapolis, Ind.

CONCRETE MIXERS.

*Koebring Machine Co., Milwaukee, Wis.
*Northwestern Steel & Iron Works, Eau Claire, Wis.
*Ransome Concrete Machinery Co., 115 Broadway, New York.
*T. L. Smith Co., Milwaukee, Wis.

OIL DISTRIBUTORS.

*Austin Western Road Mach. Co., Chicago, Ill.
*Good Roads Co., 14th & Chestnut Sts., Kansas City, Mo.
*Kinney Mfg. Co., 3535 Washington St., Boston, Mass.

ROAD GRADERS.

*Austin-Western Road Mach. Co., Chicago, Ill.
*F. B. Zieg Mfg. Co., Fredericktown, Ohio.
*Gallon Iron Works & Mfg. Co., Gallon, Ohio.

ROAD ROLLERS.

*Austin-Western Road Mach. Co., Chicago, Ill.
*Bunale Springfield Roller Co., Springfield, O.

SAND SPREADERS.

*Kindling Machinery Co., Milwaukee, Wis.

SCARIFIERS.

*Gallon Iron Works & Mfg. Co., Gallon, Ohio.

SCRAPERS.

*Austin-Western Road Mach. Co., Chicago, Ill.
*Gallon Iron Works & Mfg. Co., Gallon, Ohio.

TAR KETTLES, ASPHALT HEATERS, ETC.

*Littleford Bros., Cincinnati, O.
*Warren Bros. Co., 142 Berkeley St., Boston.

Paving Materials

ASPHALT.

*Barber Asphalt Paving Co., Land Title Bldg., Philadelphia, Pa.
*Bitoslag Paving Co., 90 West St., New York.
*Pioneer Asphalt Co., Lawrenceville, Ill.
*Standard Oil Co., 26 Bway, New York, N. Y.
*Standard Oil Co., 72 W. Adams St., Chicago.
*U. S. Asphalt Refining Co., 90 West St., N. Y.

BINDERS.

*Baker, John, Jr., 17 Battery Pl., New York.
*Barrett Co., The., 17 Battery Pl., N. Y.
*Pioneer Asphalt Co., Lawrenceville, Ill.
*Robeson Process Co., 18 E. 41st St., N. Y.
*Standard Oil Co., 26 Broadway, N. Y.
*U. S. Asphalt Refining Co., 90 West St., N. Y.

BITUMINOUS PAVEMENTS.

*Amies Road Co., Easton, Pa.
*Bituminized Road Co., Kansas City, Mo.
*Barrett Co., The., 17 Battery Pl., N. Y.
*Warren Bros. Co., 142 Berkeley St., Boston.

BRICK.

*The Barr Clay Co., Streator, Ill.
*Dunn Wire-Cut Lug Brick Co., Connecticut, O.
*Metropolitan Paving Brick Co., Canton, O.
*Schuykill Valley Vitrified Products Co., Oaks, Montgomery County, Pa.
*Terre Haute Vitrified Brick Co., Terre Haute, Ind.
*Thornton Fire Brick Co., 909 Goff Bldg., Clarksburg, W. Va.

EXPANSION JOINTS.

*Barrett Co., The., 17 Battery Pl., N. Y.
*Carey Mfg. Co., Philip, Lockland, Cinn., O.
*Pioneer Asphalt Co., Lawrenceville, Ill.
*Asbestos Protected Metal Co., Pittsburgh, Pa.
*Trussed Concrete Steel Co., Youngstown, O.

JOINT PROTECTION (CONCRETE).

*Trussed Concrete Steel Co., Youngstown, O.

OIL.

*Baker, John, Jr., 17 Battery Pl., N. Y.
*Barrett Co., The., 17 Battery Pl., N. Y.
*Indian Refining Co., 44 Whitehall Bldg., New York, N. Y.
*Pioneer Asphalt Co., Lawrenceville, Ill.
*Standard Oil Co., 26 Broadway, N. Y.
*U. S. Asphalt Refining Co., 90 West St., N. Y.

ROCK ASPHALT.

*Republic Creosoting Co., Indianapolis, Ind.
*Wyckoff Pipe & Creosoting Co., 80 E. 42d St., New York.

Public Lighting

INSULATED WIRES AND CABLES.

*Okonite Co., 233 Broadway, N. Y.

Scientific Instruments

ENGINEERS' TRANSITS AND LEVELS.

*Buff & Buff, Jamaica Pl. Sta., Boston, Mass.
*Heller & Brightly, 1124 Spring Garden, Philadelphia, Pa.

Sewerage

ACTIVATED SLUDGE AIR DIFFUSION PLATES.

*General Filtration Co., Cutler Bldg., Rochester, N. Y.

CULVERT FORMS.

*Northwestern Steel & Iron Works, Eau Claire, Wis.

PIPE (CAST IRON).

*Central Foundry Co., 90 West St., N. Y. City.
*Warren Foundry & Machine Co., 11 Broadway, N. Y.
*Gallon Iron Works & Mfg. Co., Gallon, Ohio.

PIPE CLEANING MACHINES.

*Champion Potato Machinery Co., 332 Sheffield Ave., Hammond, Ind.
*Stewart, W. H., 1814 Locust St., St. Louis.
*Turbine Sewer Machine Co., 195 11th St., Milwaukee, Wis.

PIPE JOINT COMPOUND.

*Superior Chemical Co., St. Louis, Mo.
*Pacific Flush Tank Co., 149 Broadway, N. Y.
*Standard Paint Co., Woolworth Bldg., New York.

SEWAGE DISPOSAL.

EJECTORS.

*Pacific Flush Tank Co., 149 Broadway, N. Y.

NOZZLES.

*Pacific Flush Tank Co., 149 Broadway, N. Y.

SIPHONS AND FLUSH TANKS.

*Pacific Flush Tank Co., 149 Broadway, N. Y.

VITRIFIED FIRE CLAY SEWER TILE.
East Ohio Sewer Pipe Co., Irondale, O.

Street Cleaning

And Refuse Disposal

FLUSHERS.

*American Car Sprinkler Co., Worcester, Mass.
*General Vehicle Co., Long Island City, N. Y.
*Tiffin Wagon Co., Tiffin, Ohio.

*Advertisers—See Alphabetical Index on last white page.

BUYERS' CLASSIFIED DIRECTORY

INCINERATORS.

*Stacy-Bates Co., McKnight Building,
Minneapolis, Minn.

SPRINKLING WAGONS.

*Austin Western Road Mach. Co., Chicago, Ill.
*General Vehicle Co., Long Island City, N. Y.
*Tiffin Wagon Co., Tiffin, O.

STREET SWEEPERS.

*Austin Western Road Mach. Co., Chicago, Ill.
*Baker Mfg. Co., Springfield, O.

SNOW PLOWS.

*Baker Mfg. Co., Springfield, O.

Street Signs

*Mathews Interlocking Sign Co., White Plains,
N. Y.
*Lebanon Machine Co., Lebanon, N. H.

Water Works

AIR COMPRESSORS.

*Gardner Governor Co., Quincy, Ill.
*Sullivan Mch. Co., 122 S. Michigan Ave.,
Chicago, Ill.

AIR LIFT PUMPS.

*Sullivan Mch. Co., 122 S. Michigan Ave.,
Chicago, Ill.

*CORPORATION AND STOP COCKS.
*Glauber Brass Mfg. Co., Cleveland, Ohio.

DEEP WELL PUMPS.

*Cook, A. D., Lawrenceburg, Ind.
*Layne & Bowler Co., 1117 Exchange Bldg.,
Memphis, Tenn.

FILTERS.

*N. Y. Continental Jewell Filtration Co.,
15 Broad St., N. Y.
*Pittsburgh Filter Co., Pittsburgh, Pa.

FILTRATION PLANTS.

*Norwood Engineering Co., Florence, Mass.
*Pittsburgh Filter Co., Pittsburgh, Pa.
*Roberts Filter Co., Darby, Pa.

FLAP VALVES.

*Coldwell-Wilcox Co., Newburgh, N. Y.

METERS.

*Badger Meter Co., 261 Third St., Milwaukee.
*Buffalo Meter Co., 290 Terrace, Buffalo, N. Y.
*Hersey Mfg. Co., South Boston, Mass.
*Pittsburgh Meter Co., East Pittsburgh, Pa.
*Thomson Meter Co., 110 Bridge St., Bklyn.
*Union Water Meter Co., 33 Hermon St.,
Worcester, Mass.

METER BOXES.

*Clark, H. W. Co., 1508 Broadway, Mattoon,
Ill.
*Ford Meter Box Co., Wabash, Ind.

METER TESTING MACHINES.

*Clark, H. W. Co., 1508 Broadway, Mattoon,
Ill.
*Ford Meter Box Co., Wabash, Ind.

PIPE, CAST IRON.

*Amer. Cast Iron Pipe Co., First National
Bank Bldg., Chicago, Ill.
*Central Foundry Co., 90 West St., New York
City.

*Clow, Jas. B. & Sons, 544 S. Franklin St.,
Chicago, Ill.

*Donaldson Iron Co., Emaus, Lehigh Co., Pa.
*Fox, John & Co., 253 Broadway, N. Y.
*Glamorgan Pipe & Foundry Co., Lynchburg,
Va.

*Lynchburg Foundry Co., Lynchburg, Va.
*Massillon Iron & Steel Co., Massillon, O.
*Standard Cast Iron Pipe & Foundry Co.,
Bristol, Pa.

*U. S. Cast Iron Pipe & Foundry Co.,
Burlington, N. J.
*Warren Foundry & Machine Co., 11 Broad-
way, New York, N. Y.

PUMPS.

*Allis-Chalmers Mfg. Co., Milwaukee, Wis.
*Artesian Well & Supply Co., Providence, R. I.
*Cook, A. D., Lawrenceburg, Ind.
*Dayton, Dick, Co., Quincy, Ill.
*Gardner Governor Co., Quincy, Ill.

SCREENS FOR WELLS.

*Cook, A. D., Lawrenceburg, Ind.
*Layne & Bowler Co., 1117 Exchange Bldg.,
Memphis, Tenn.

SERVICE BOXES.

*Modern Iron Works, Quincy, Ill.

SHEAR VALVES.

*Coldwell-Wilcox Co., Newburgh, N. Y.

SLEEVES AND VALVES.

*Smith, A. P., Mfg. Co., East Orange, N. J.

SLUICE GATES.

*Coldwell-Wilcox Co., Newburgh, N. Y.

STERILIZING APPARATUS.

*Electro Bleaching Gas Co., 19 East 41st St.
New York.

STRAINERS.

*Cook, A. D., Lawrenceburg, Ind.

TAPPING MACHINES.

*Smith, A. P., Mfg. Co., East Orange, N. J.

VALVES.

*Flower-Stephens Mfg. Co., 105 Parkinson St.
Detroit, Mich.

*Glauber Brass Mfg. Co., Cleveland, Ohio.

*Kensselaer Valve Co., Troy, N. Y.

VALVE BOXES.

*Modern Iron Works, Quincy, Ill.

WATER MAIN CLEANING.

Nat'l Water Main Cl'ng Co., 50 Church St., N. Y.

WATER SOFTENING AND PURIFYING

*N. Y. Continental Jewell Filtration Co.,
15 Broad St., N. Y.

WATER SUPPLY FROM WELL SYSTEMS.

Rovd Eng. Co., Inc., 11 R'way, N. Y.

*Cook, A. D., Lawrenceburg, Ind.

WATER WORKS EQUIPMENT.

*H. W. Clark Co., 1508 Broadway, Mattoon,
Ill.

WELL DRILLS.

*Layne & Bowler Co., 1117 Exchange Bldg.,
Memphis, Tenn.

What better assurance of full tire service and low mileage cost can you want than this?—

'Nobby' Tread Tires are adjusted on the basis of five thousand miles.

The 'Nobby' is one of five United States "Balanced" Tires which meet every motoring condition of price and use.

United States Tire Company
"Nobby," "Chain," "Usco," "Royal Cord," "Plain"
"INDIVIDUALIZED TIRES"
1790 Broadway NEW YORK

UNITED STATES RUBBER COMPANY
RUBBER SYSTEM
AND ASSOCIATED COMPANIES

STREETS AND ROADS.

Waldron, Ark.—Scott county board of commissioners has authorized the issuance of \$100,000 road improvement District No. 1 bonds.

Los Angeles, Cal.—Ordinance adopted to open Elysian Park Ave. from Boylston St. to Innes Ave.

San Diego, Cal.—Supervisor C. L. Good informed by the state highway commission that grading work on a 2-mile stretch on what is known as the Bailey grade on the Glenn Springs and Alpine section of the state highway will be started at once. The work will be done by day labor and will include the building of two culverts to cost about \$1,000 each.

Fresno, Cal.—County Treasurer Ewing as custodian of the city funds is signing up for validation 17 bonds to be issued for the paving of the alley in City Block 38. The total of the bonds is \$777.24.

Thomasville, Ga.—Citizens voted in favor of issuing \$75,000 sidewalk and street improvement bonds.

Muscataine, Ia.—The paving completed by the Ford Paving Co. on North Mulberry Ave. was accepted by the council and the city engineer authorized to prepare schedule for the issuance of bonds.

Muscataine, Ia.—Ordinance authorizing the grading of Magnolia St. was adopted and the work will be started at once.

Muscataine, Ia.—Council authorized the city engineer to report an estimate of cost for grading of 11th St., between Oak St. and Isett Ave.

Great Falls, Mont.—Board of county commissioners decided not to build road near Portage which was recently petitioned for and which has since been looked into by County Surveyor B. C. Johnston. On account of the press of more necessary road improvement and the high cost of this piece action upon it was deferred by the commissioners until later.

Joplin, Mo.—Members of the general committee of the road campaign that ended with \$102,969 pledged to build Joplin's portion of a concrete highway between here and Miami, Okla., decided to begin construction work on the thoroughfare at the earliest possible date. A committee composed of Howard C. Murphy, E. C. Abernethy and John M. Malang was appointed to obtain figures on the cost of material to construct the road.

Lakewood, N. J.—Township Clerk Geo. H. Hurlburt receiving bids June 1 for \$60,000 street improvement coupon bonds.

Brooklyn, N. Y.—Final authorizations were given by the board of estimate and apportionment from January 1 to May 1 inclusive, for public improvements in the entire city to be paid for by assessment upon property benefited to a total of \$2,614,700. Of this amount Brooklyn authorizations amounted to \$1,923,100, or over 73 per cent. of the total. Queens is permitted to have \$297,400. A total of \$857,000 authorizations were granted at the last meeting of the board of estimate for Brooklyn and Queens. Of this total, \$227,900 was for final authorizations—Brooklyn \$52,100 and Queens \$175,800. The total of preliminary authorizations was \$629,100, of which \$492,100 was for Brooklyn and \$137,000 for Queens. The two leading projects for Brooklyn are the two big proposed trunk sewer mains for the Stone and Pitkin Ave. sections, to cost nearly half a million dollars. The two leading authorizations for Queens are the sewers for Corona, to cost \$70,000, and the paving of Roosevelt Ave. in the Woodside-Elmhurst section, to cost \$78,000. Following is a list of the final authorizations granted by the board for Brooklyn: Regulating and grading Ave. T, from Stilwell Ave. to W. 12th St.; W. 13th St., from Ave. S to Ave. T, and from Stilwell Ave. to W. 9th St., estimated cost \$9,000; proposed contract time 50 days. Also in Rockaway Parkway as legally opened to a width of 70 ft., from Glenwood road to Conklin Ave.; proposed contract time, 25 days; estimated cost, \$1,500. Sewers in Kings Highway, from W. 7th St. to Ave. Q; in W. 7th St., from Ave. R to Ave. Q; in W. 8th St., from Ave. R to Kings Highway; in W. 9th St., from Ave. R to Kings Highway; in W. 10th St., from Ave. R to Kings Highway, and in Ave. Q, from W. 7th St. to a point about 20 ft. west of W. 7th St., and from a point about 160

ft. west of West 7th St. to West 11th St.; proposed contract time, 150 days; estimated cost, \$32,000. Also in Kings Highway, from West 6th St. to West 7th St., Brooklyn. Preliminary work authorized March 2, 1917. Expenditures, \$22. Proposed contract time, 150 days; estimated cost, \$800. Also in the northerly side of 60th St., from 7th Ave. to 8th Ave.; proposed contract time, 20 days; estimated cost, \$2,000. Curbing and flagging, where necessary, and paving with asphalt (permanent pavement), Albemarle road, from Ocean Parkway to East 5th St.; proposed contract time, 25 days; estimated cost, \$3,800. Paving with asphalt, permanent pavement, 77th St., from 14th Ave. to 15th Ave.; proposed contract time, 25 days; estimated cost, \$6,300. Also W. 33d St., from Mermaid Ave. to Surf Ave., excluding the right of way of the New York & Coney Island Railroad; proposed contract time, 25 days; estimated cost, \$5,700. Sewer in Chauncey St., from Woolsey Ave. to Potter Ave., Long Island City; proposed contract time, 30 days; estimated cost, \$2,500. Also in Van Wyck Ave., Richmond Hill, from Atlantic Ave. to Silkworth (91st) Ave.; Silkworth (91st) Ave., from Van Wyck Ave. to Ellsworth Ave. (134th St.); Lester Ave. (135th St.), from Silkworth (91st) Ave. to Ridgewood (89th) Ave., and Ellsworth Ave. (134th St.), from Silkworth (91st) Ave. to Jamaica Ave., proposed contract time, 90 days; estimated cost, \$16,700. Grading the roadway space and curbing Grove St., from Grandview Ave. to Forest Ave., Ridgewood; proposed contract time, 10 days; estimated cost, \$1,100. Grading between its southwesterly line and the property ceded for the street by the trustees of St. Patrick's Cathedral, and curbing and flagging on its southwesterly side, Review Ave., from Howard St. to Laurel Hill Blvd., Laurel Hill; proposed contract time, 35 days; estimated cost, \$5,900. Paving with improved granite block, permanent pavement, for a width of 20 ft., centrally located, Review Ave., from Howard St. to a line about 210 ft. northwesterly from the angle point near Laurel Hill Blvd., and with second hand granite block (preliminary pavement) for a width of 20 ft., centrally located with respect to the curb lines, from the latter point to Laurel Hill Blvd., Laurel Hill; proposed contract time, 40 days; estimated cost, \$28,400. Paving with asphalt block, 6th Ave., Long Island City, from Flushing Ave. to Grand Ave.; proposed contract time, 30 days; estimated cost, \$18,000. Regulating and grading Crescent St., Long Island City, from South Jane St. to 13th St., and paving with improved granite block for a width of 12½ ft. adjoining the new southeasterly curb line; proposed contract time, 50 days; estimated cost, \$10,100. The following sewers were authorized: In Hancock St., Long Island City, from Mott Ave. to 14th St.; in 13th and 14th Sts., from Hancock St. to the Boulevard; proposed contract time, 45 days; estimated cost, \$4,300. In Ferris St., Woodhaven, from Ferry St. to Yarmouth St.; contract time, 10 days; estimated cost, \$700. The leading preliminary authorizations for Brooklyn were two big trunk sewers estimated to cost \$240,000 each, a total of \$480,000. Of the proposed main in Pitkin Ave., from Saratoga to Stone; in Stone, from Pitkin to Dumont, and in Dumont from Stone to Snediker.

Asheville, N. C.—Commission of public works recommended that a sidewalk be laid on the east side of Pearson drive.

Lenoir, N. C.—Caldwell county defeated the proposition to issue \$250,000 road bonds.

Tremont, O.—City Auditor F. C. Klein receiving bids June 4 for \$27,300 North Front St. paving coupon bonds.

Stockport, O.—Voted in favor of issuing \$10,500 road bonds.

Johnstown, Pa.—Mayor Louis Franke and City Clerk John W. Cramer affixed their signatures to 200 bonds, representing a value of \$75,000 in all. The bonds are those issued for the Point improvements and for repaving, the former issue being of \$50,000 and the latter for \$25,000. Both issues have been sold to Montgomery, Clothier & Tyler, of Philadelphia.

White Bluff, Tenn.—Taxpayers voted in favor of issuing \$5,000 street improvement bonds.

Austin, Tex.—The Attorney General's Department has approved a \$200,000 issue of special road bonds of Duval county.

San Antonio, Tex.—The United States government will pay three-fourths of the cost of tarviating or similarly treating sections of the Fredericksburg and Austin roads, a total of about 15 miles. The work is to be done by the county and will cost approximately \$60,000. Approval of this arrangement was given by Brigadier General Parker, acting commander of the Southern Department, following a conference between County Judge Davis and Col. Harry L. Rogers.

Ogden, Utah.—City commission adopted Engineer Tracy's plans and specifications and notice of intention was ordered advertised for two sidewalk and one sewer district: Tyler Ave., between 23d and 26th Sts., 26th from Harrison to Tyler and Harrison from 25th to 28th; 20th St. from Monroe to Jackson, north side of 20th from Jackson to Steele, Steele from 19th to 20th; east side of Jackson from 19th to 20th, both sides of Jackson between 20th and 21st, Rushmer from Quincy to Jackson; sewer district of Tyler from 23d to 26th, Harrison from 24th to 28th, Brinker from 26th to 27th, 23d from Harrison to Tyler, Capitol between Harrison and Tyler, 27th between Jackson and Harrison, Madison from 28th to 29th, and Kershaw from Jefferson to Madison.

PROPOSALS

Bids received until June 4, 1917.

Street Improvement

Covington, Virginia.

Street Paving

Sealed proposals will be received by the Mayor and Council of the Town of Covington, Va., up to 2:00 P. M. on Monday, June 4, 1917, at the Council Chamber in the Masonic Building, Main Street, Covington, for furnishing all materials and constructing the following approximate amount of paving:

Sheet Asphalt Paving.....	39,700 Sq. Yards
Asphaltic Concrete Paving.....	9,800 " "
Vitrified Block Paving.....	800 " "
Plain Concrete Curb.....	26,570 Lin. Feet
Armored Concrete Curb.....	5,150 " "
Concrete Gutter.....	27,560 " "
Paving Brick Gutter.....	4,250 " "
Header Curb.....	1,730 " "

Sewer Construction

Approximate quantities as follows:

Trenching and Pipe Laying—

12-Inch Terra Cotta Sewer Pipe..	2,500 Lin. Feet
15 " " " " " "	2,845 " "
18 " " " " " "	1,460 " "
24 " " " " " "	990 " "
30 " " " " " "	420 " "
6 " " " " " "	240 " "

And approximately 80 Specials.

20 4-Foot Diameter Manholes, 24-Inch Rings, and Covers about 300 Lbs. each.

Specifications and information to bidders can be obtained on application to C. P. Barnett, Consulting Engineer, Savings Bank Building, Covington, Va. A deposit of \$5.00 will be required for each copy of Specifications, and on return of same the \$5.00 will be refunded.

A certified check for \$500.00, made payable to the order of E. B. Butler, Mayor of Covington, Va., must accompany each bid.

The Mayor and Council reserves the right to reject any or all bids. Bids will be made on a basis of cash payments for all work done.

E. B. BUTLER, Mayor.

C. P. BARNETT, Consulting Engineer.

BIDS WANTED

Street Paving

Sealed bids for 29,500 yards brick pavement will be opened by the City of Troy, Ala., at 8 P. M., June 12.

Plans and specifications at City Clerk's office. The right to reject any and all bids is reserved.

M. D. PACE,
City Engineer.